

ARIZONA DEPARTMENT OF TRANSPORTATION

REPORT NUMBER: FHWA-AZ98-464

PECOS - ITI DATA MODELS

Final Report

Prepared by:

Sarath C. Joshua, P.E., Ph.D.
Lee Engineering, LLC
3240 East Camelback Road, Suite 180
Phoenix, AZ 85018

June 1998

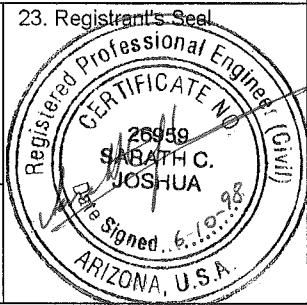
Prepared for:

Arizona Department of Transportation
206 South 17th Avenue
Phoenix, Arizona 85007
in cooperation with
U.S. Department of Transportation
Federal Highway Administration

The contents of the report reflect the views of the authors who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Arizona Department of Transportation or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation. Trade or manufacturers' names which may appear herein are cited only because they are considered essential to the objectives of the report. The U.S. Government and The State of Arizona do not endorse products or manufacturers.

Technical Report Documentation Page

1. Report No. FHWA-AZ-98-464	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle PECOS – ITI DATA MODELS		5. Report Date June 1998
		6. Performing Organization Code
7. Author Sarah C. Joshua, P.E., Ph.D.		8. Performing Organization Report No.
9. Performing Organization Name and Address Lee Engineering LLC 3240 E. Camelback Road Suite 180 Phoenix, Arizona 85018		10. Work Unit No.
		11. Contract or Grant No. SPR-PL-1(51) 464
12. Sponsoring Agency Name and Address ARIZONA DEPARTMENT OF TRANSPORTATION 206 S. 17TH AVENUE PHOENIX, ARIZONA 85007		13. Type of Report & Period Covered
		14. Sponsoring Agency Code
Project Manager: Steve Owen. P.E.		
15. Supplementary Notes Prepared in cooperation with the U.S. Department of Transportation, Federal Highway Administration		
16. Abstract		
<p>This study concerned the development and use of cost models for forecasting future year operations & maintenance costs associated with Intelligent Transportation Infrastructure(ITI) in Arizona. This infrastructure consists of both urban and rural applications of Intelligent Transportation Systems(ITS) elements. The urban systems consisted of Phoenix and Tucson Freeway Management Systems. The rural applications comprised on Road Weather Information Systems(RWIS), Variable Message Signs etc.</p> <p>A primary source of cost data used in the development of the models was the Performance Controlled System(PECOS) that Arizona DOT utilizes to monitor all highway maintenance activities. Performance guidelines specified in PECOS for preventive maintenance were used in the cost model.</p> <p>The cost model developed consists of two submodels: (1) operating resource model and, (2) maintenance resource model. Existing and future statewide ITI inventory was based on installed systems and on future ITI deployment schedules. The operating resource model applies annual operating costs for each category of ITI element on the anticipated statewide ITI inventory that was determined for each year.</p> <p>The maintenance resource model incorporated factors such as: scheduled or preventive maintenance, unscheduled or demand maintenance, and equipment warranty periods. The degradation of ITI elements with age and their eventual replacement costs were based on current observations.</p> <p>The cost models developed were used to generate annual O&M forecasts for the years 1998 through 2012. The results provide a detailed breakdown of the costs by each ADOT District in terms of total cost and total man-hours required.</p>		
17. Key Words Intelligent Transportation Infrastructure, ITS, Operation, Maintenance, Costs	18. Distribution Statement Document is available to the U.S. public through the National Technical Information Service, Springfield, Virginia 22161	23. Registrant's Seal
19. Security Classification Unclassified	20. Security Classification Unclassified	21. No. of Pages 22. Price



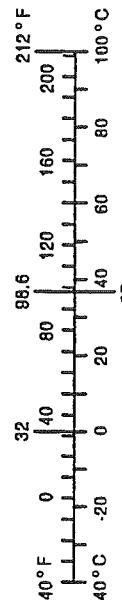
METRIC (SI*) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

APPROXIMATE CONVERSIONS TO SI UNITS							APPROXIMATE CONVERSIONS TO SI UNITS						
Symbol	When You Know	Multiply By	To Find	Symbol	When You Know	Multiply By	To Find	Symbol	When You Know	Multiply By	To Find	Symbol	
<u>LENGTH</u>							<u>LENGTH</u>						
in	Inches feet	2.54 0.3048	centimeters meters	cm	mm	millimeters meters	0.039 3.28	inches feet	in	ft	ft	ft	
ft	yards	0.914	meters	m	m	meters	1.09	feet	yd	yd	yards	yd	
yd	miles	1.61	kilometers	km	km	kilometers	0.621	miles	mi	mi	miles	mi	
<u>AREA</u>							<u>AREA</u>						
in ²	square inches	6.4552	centimeters squared	cm ²	mm ²	millimeters squared	0.0016	square inches	in ²	ft ²	square feet	ft ²	
ft ²	square feet	0.0929	meters squared	m ²	m ²	meters squared	10.764	square feet	mi ²	mi ²	square miles	mi ²	
yd ²	square yards	0.836	meters squared	m ²	yd ²	kilometers squared	0.39	square miles	ac	ac	acres	ac	
mi ²	square miles	2.59	kilometers squared	km ²	ha	hectares (10,000 m ²)	2.53	acres					
<u>MASS (weight)</u>							<u>MASS (weight)</u>						
oz	ounces	28.35	grams	g	g	grams	0.0353	ounces	oz	lb	pounds	lb	
lb	pounds	0.454	kilograms	kg	kg	kilograms	2.205	short tons	T	T	short tons	T	
T	short tons (2000 lb)	0.907	megagrams	Mg	Mg	megagrams (1000 kg)	1.103						
<u>VOLUME</u>							<u>VOLUME</u>						
fl oz	fluid ounces	29.57	milliliters	ml	ml	milliliters	0.034	fluid ounces	fl oz	gal	gallons	gal	
gal	gallons	3.785	liters	L	L	liters	0.264	gallons	ft ³	ft ³	cubic feet	ft ³	
ft ³	cubic feet	0.0328	meters cubed	m ³	m ³	meters cubed	35.315	cubic feet	yd ³	yd ³	cubic yards	yd ³	
yd ³	cubic yards	0.765	meters cubed	m ³		meters cubed	1.308	cubic yards					
<u>TEMPERATURE (exact)</u>							<u>TEMPERATURE (exact)</u>						
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C	°C	Celsius temperature	9/5 (then add 32)	°Fahrenheit temperature	°F	°C	°C	°Fahrenheit temperature	°F

These sections conform to the requirement of EHWA Order 5190 10

*SI is the symbol for the International System of Measurements



TEMPERATURE (exact)

LIST OF ABBREVIATIONS

ADOT	Arizona Department of Transportation
ATIS	Advanced Traveler Information System
ATRC	Arizona Transportation Research Center
AVC-Piezo	Automatic Vehicle Classification (Piezoelectric-based)
AZTech	AZTech - Phoenix ITS Model Deployment Initiative
CCTV	Closed Circuit Television Camera
DM	Demand Maintenance (unscheduled maintenance)
ES	Elk Signs
ETAK	ETAK, Inc.
FMS	Freeway Management System
HCRS	Highway Closure & Restriction System
ILD	Induction Loop Detector
ITI	Intelligent Transportation Infrastructure
ITS	Intelligent Transportation Systems
LTPP	Long Term Pavement Performance
O&M	Operation and Maintenance
PAD	Passive Acoustic Detector
PECOS	Performance Evaluation Cost System
PM	Preventive Maintenance (scheduled maintenance)
RWIS - CPU	Road Weather Information System - Central Processing Unit
RWIS - RPU	Road Weather Information System - Remote Processing Unit
SHRP	Strategic Highway Research Program
TAC	Technical Advisory Committee
TIR	Transportation Information Resources
TOC	Traffic Operations Center
TSS	Traffic Signal Synchronization
US West	US West Communications
VDS	Vehicle Detection System
VMS	Variable Message Sign
WIM-Piezo	Weigh-in-Motion System (Piezoelectric-based)
WIM-BP	Weigh-in-Motion System (Bending Plate-based)
WSDOT	Washington State Department of Transportation

TABLE OF CONTENTS

1.0	Introduction.....	1
1.1	Goals & Objectives	1
1.2	Assumptions.....	2
1.3	Project Scope of Work.....	2
1.3.1	Modifications to Project Scope.....	2
1.4	Project Oversight Process	2
2.0	An Overview of the PECOS System	5
2.1	Use of PECOS to Track Maintenance Activities.....	6
2.2	Limitations of PECOS's Ability to Forecast	6
3.0	ITI Operation and Maintenance Model.....	7
3.1	Overview of Model	7
3.2	ITI Operating Resource Forecasting Model	8
3.3	ITI Maintenance Resource Forecasting Model.....	10
4.0	Identification of ITI Elements.....	13
4.1	Methodology for Developing Annual Statewide ITI Inventory	14
5.0	Annual Statewide ITI Inventory	17
5.1	Phoenix FMS	17
5.2	Phoenix TOC	17
5.3	Tucson FMS.....	17
5.4	Tucson TOC.....	18
5.5	Flagstaff TOC	18
5.6	AZTech Model Deployment Initiative (MDI)	18
5.7	Statewide Rural ITI.....	19
5.8	Weigh-in-Motion Sites and Automated Vehicle Classifications Sites	19
5.9	Highway Closure and Restriction System (HCRS)	19
5.10	Interstate Route 40 Advanced Traveler Information System (ATIS) Kiosks	20
6.0	Cost Basis and Assumptions.....	21
6.1	Distribution of O&M Responsibilities.....	23
6.2	ITI Warranties.....	23
6.3	Life Cycle Cost Considerations	24
6.4	Equipment Upgrades and Obsolescence.....	24
7.0	Results.....	25
8.0	Conclusions and Recommendations	27
APPENDIX A – Annual O&M Forecast for the Phoenix TOC		29
APPENDIX B – Annual O&M Forecast for the Flagstaff TOC		31
APPENDIX C – Statewide ITI O&M Resource Forecast by Year		33
APPENDIX D – Statewide ITI O&M Resource Forecast by ADOT Organization.....		43
APPENDIX E – Statewide ITI Inventory Forecast (excluding Phoenix TOC and Flagstaff TOC)		95
REFERENCES		111
BIBLIOGRAPHY		113

LIST OF FIGURES

Figure 1.	ITI Operating Resource Forecasting Model	9
Figure 2	ITI Maintenance Resource Forecasting Model.....	12

LIST OF TABLES

Table 1.	Project Technical Advisory Committee.....	3
Table 2.	ITI Elements Selected for Cost Modeling	7
Table 3.	Existing and Planned ITI Systems in Arizona	8
Table 4.	Average Costs for Operating ITI Elements	10
Table 5.	Future ITI Element Estimation Criteria for FMS	15
Table 6.	The Cost Basis for Annual ITI O&M Forecasts	22
Table 7.	PECOS Activity Codes and Other Data Sources for PM and DM	23
Table 8.	Annual O & M Cost Forecasts for ITI in Arizona.....	26

1.0 INTRODUCTION

The Performance Controlled System, better known by the acronym PECOS was first developed and implemented by Arizona Department of Transportation (ADOT) in 1970 as the department's highway maintenance work management system. The primary objective of PECOS is to help ADOT management staff keep track of all activities that are related to highway maintenance and better plan ahead based on historical data. From its inception, PECOS has been implemented in a mainframe environment. The computer program behind PECOS has been maintained by the ADOT unit, Transportation Information Resources (TIR) and its predecessors. Since its original implementation PECOS has undergone periodic improvements. The current version is called PeCoS II and is being further modified for use as an application in the Microsoft Windows® environment. For the purpose of this study, all references to PECOS implies the current version, PeCos II.

When PECOS was first implemented there were very few working models of maintenance management systems in the country. The system keeps track of all highway maintenance activities carried out by all of the maintenance units within ADOT. Each maintenance work unit is expected to keep track of the type of maintenance activity, and the amount of labor, equipment and material expended in performing that activity on a daily basis and report that information to the PECOS system. Each maintenance activity is associated with a unique identification number, a description of the road inventory feature maintained by that activity and a measurement unit for that work. The system also utilizes Performance Guidelines that specify standard labor, equipment and material requirements for each maintenance activity. The PECOS system is able to generate reports on any specific road maintenance activity carried out by a specific maintenance organization or generate statewide costs.

Although the PECOS system keeps track of maintenance activities for most existing highway hardware maintained by ADOT, newer electronic systems that fall within the umbrella of Intelligent Transportation Systems (ITS) have not been fully incorporated into PECOS. The full collection of ITS components is commonly referred to as Intelligent Transportation Infrastructure (ITI). Many state highway agencies, including ADOT, have realized that operating and maintaining ITI elements at acceptable levels of performance requires substantial maintenance resources, in terms of labor, equipment and materials. In 1996, ADOT identified the need for better forecasting ability on these recurring annual ITI operation and maintenance (O&M) costs as an agency priority. This topic was proposed and selected by the agency as a research project for the Arizona Transportation Research Center (ATRC), the research unit of ADOT. The scope of this project was developed by the center to address the identified agency need with the goal that the project would develop a product that will provide the agency a systematic method for estimating annual O&M costs associated with ITI in Arizona.

1.1 GOALS AND OBJECTIVES

The goal of this project was to provide ADOT the ability to forecast operations and maintenance costs associated with both existing and planned ITI in the state.

The project objective was to develop the essential cost data models required for incorporation of O&M considerations related to ITI into the ADOT maintenance management system, PECOS. The original scope of work was limited to the development of the required cost models and generating initial cost forecasts.

1.2 ASSUMPTIONS

The ability to implement the project results and recommendations were predicated on the following assumptions regarding the capabilities of the PECOS system:

1. The PECOS system is structured in a manner that can accommodate cost models.
2. Once the cost models are incorporated in the system, it has the ability to forecast future year operations and maintenance costs associated with ITI.

1.3 PROJECT SCOPE OF WORK

The initial scope of the project consisted of the following project tasks:

- Task 1: Project management & progress.
- Task 2: Review of proposed work plan.
- Task 3: Review the PECOS system and identify highway inventory and maintenance elements.
- Task 4: Identify ITI elements to be included in the research.
- Task 5: For selected list of ITI elements, review and validate annual O&M costs.
- Task 6: Develop cost models required for incorporation of ITI elements into PECOS.
- Task 7: Project the ITI PECOS maintenance budget on an annual basis up to FY 2010.
- Task 8: Final Report, Research Note and Presentation.

1.3.1 Modifications to Project Scope

The findings from Task 3 review of PECOS identified certain limitations concerning PECOS capabilities that would have been crucial for executing the project as originally scoped. These limitations are discussed in detail in Section 2.2. The project team and the Technical Advisory Committee (TAC) discussed these limitations and agreed to modify the project scope such that the cost models and the resulting forecasts would be developed as stand alone models utilizing PECOS data as much as possible for labor, material and equipment costs. Where adequate data were not available for ITI elements in Arizona, data from other states were to be utilized. The operational costs for various ITI elements are not available in PECOS and will be based on available ADOT data supplemented by data from other states.

1.4 PROJECT OVERSIGHT PROCESS

All research projects undertaken by ATRC are scoped by a TAC that typically consists of stakeholders and end users of project results. When a project is launched, this committee contin-

ues to function as the project oversight committee. All project results are reviewed and approved by this committee prior to finalization. The composition of the TAC on this project is shown in Table 1.

Table 1. Project Technical Advisory Committee

	Name	Organization
1	Agah, Manny	Transportation Technology Group/ADOT
2	Carter, Phil	Phoenix Traffic Operation Center
3	Dana, Steve	Electrical Operations/ADOT
4	Decker, Jim	AZTech MDI, City of Tempe
5	Etheredge, Bob	Electrical Operations/ADOT
6	Fowler, Tom	Federal Highway Administration
7	Hendrix, Lonnie	Assistant State Maintenance Engineer
8	Hansen, Alan	Federal Highway Administration
9	Jonas, Glenn	Phoenix Traffic Operation Center
10	Lozano, Marc	Flagstaff District Traffic /ADOT
11	McClatchey, Chuck	FMS Maintenance
12	Morden, Bob	Maintenance Planning/ADOT
13	Nelson, Jon	FMS Construction/ADOT
14	Owen, Steve – ADOT Project Manager	Transportation Technology Group/ADOT
15	Pfeifer, Jerry	Phoenix Traffic Operation Center
16	Pickering, Art	Flagstaff District Traffic/ADOT
17	Sykes, Paul	Tucson Traffic Operations
18	Warner, Hank	Tucson Regional Traffic/ADOT
19	Williams, Norma	Electrical Operations /ADOT
20	Wolfe, Tim	Transportation Technology Group/ADOT
21	Young, Mike	FMS Construction/ADOT

2.0 AN OVERVIEW OF THE PECOS SYSTEM

In order to obtain a clear understanding on how the final cost models would have to be structured for incorporation in PECOS, the project team carried out a brief review of the PECOS system and its functions. A number of PECOS end users in ADOT were interviewed to gain a good understanding of the system and procedures. The Maintenance Planning Unit of ADOT, responsible for PECOS, was consulted for verification of the project team's understanding of the key features of the system. A brief overview of PECOS was formally presented to the project's TAC at the meeting on November 13, 1997. During this presentation the committee was briefed that the project team had discovered issues that had a significant impact on the project scope. These are discussed in Section 2.2.

There are four top level PECOS functional areas which may be considered subsystems. Each of these subsystems support numerous planning functions that are listed below:

1. Work Management System

- Work Program and Budget: labor/equipment/material rates; activity planning
- Annual Work Distribution: program summary
- Resource Requirements
- Work Reporting: daily reports; expenditures; bi-weekly time sheets
- Management Reports: work progress; work calendar; unit cost analysis; activity analysis; trend analysis
- System Setup: system setup file
- Utilities: system backup; new fiscal year
- Additional Reporting: resource summary; work progress review

2. Material Management Inventory

- Material Inventory: status report; usage/demand history
- Inventory Utility: backup files

3. Communications

- Upload and Download data on: work reports; planning files; material inventory; equipment usage; employees; equipment; time sheet

4. Data Analysis

- The functions described above are utilized by the ADOT Maintenance Planning Unit for planning and programming the agency's highway maintenance activities

2.1 USE OF PECOS TO TRACK MAINTENANCE ACTIVITIES

PECOS contains definitions for each highway maintenance activity and its associated inventory feature and work unit. For each type of maintenance activity, performance guidelines have been established ⁽¹⁾. These guidelines describe the standard labor/equipment/material needs for each activity. When ADOT work crews carry out their maintenance activities, information such as type of inventory feature, labor/equipment/material expended on the job are recorded and entered into PECOS from each maintenance organization via a dial-up communication link. This information is used for various analyses and reports that can be generated from within the PECOS system.

While the PECOS system seems well designed to capture all maintenance data, some doubts were expressed by TAC members on the accuracy of data available through PECOS on activities such as traffic signal maintenance. It appears that, due to data reporting factors such as the amount and level of detail reported, the system may not be capturing all of the maintenance data. However, it is obviously the best source of data available for systematic maintenance planning.

2.2 LIMITATIONS OF PECOS'S ABILITY TO FORECAST

During Task 3, when the PECOS system was reviewed in detail it was discovered that several original assumptions regarding PECOS' abilities were inaccurate and are discussed below. The PECOS system keeps track of labor, equipment and material expenditures related to specific types of road maintenance features. Historical records provide data on past maintenance activities and enable the generation of standard rates for each maintenance activity.

During the PECOS system development effort, the ability to produce multi-year maintenance cost forecasts had not been incorporated. The system does have the ability to produce maintenance cost trends for past years and also provide an estimate of maintenance costs for the next fiscal year. The one-year forecast is essentially based on anticipated labor, material and equipment resource requirements identified for the next year by each ADOT district. The system does not have any explicit links to the five-year construction program, hence has no inherent ability to forecast future maintenance costs beyond the next fiscal year.

Although some ITI elements have already been incorporated into PECOS, all elements are not incorporated into PECOS at this time. As a result, historical maintenance data are lacking in the system for many ITI elements. It must be noted that the data which is available through PECOS, reflect the maintenance needs of a relatively new system of ITI, as is the case in Arizona.

3.0 ITI OPERATION AND MAINTENANCE MODEL

This chapter describes the O&M model that was developed and utilized to forecast future year O&M requirements. Although the ITI O&M model developed by this project utilized PECOS cost data for generating multi-year O&M cost forecasts, this was accomplished external to PECOS. As discussed earlier in Section 1.3.1, this approach was necessitated by the fact that, PECOS is unable to produce multi-year cost forecasts. The generation of annual O&M cost forecasts, based on the modeled process, was carried out utilizing a Microsoft Access database. This database contained detailed information on the statewide ITI deployment schedule. The forecasts of O&M costs are given in constant 1997 dollars with no adjustment for annual inflation.

3.1 OVERVIEW OF MODEL

The ITI O&M model consists of two submodels. The first submodel addresses resource requirements for ITI operations while the second addresses ITI maintenance resource requirements. Each of these submodels is briefly discussed in the next sections.

From an O&M viewpoint, the entire statewide ITI was assumed to consist of key ITI elements. A number of key ITI elements were selected for inclusion in the cost modeling process. These elements and their common acronyms used in this report are shown in Table 2.

Table 2. ITI Elements Selected for Cost Modeling

ITI Element	Acronym
Automatic Vehicle Classification	AVC
Closed Circuit Television Cameras	CCTV
Inductive Loop Detector	ILD
Node Room	None
Passive Acoustic Detector	PAD
Power Cabinet	None
Ramp Meter/ILD	None
Ramp Meter/PAD	None
Road Weather Information System – Central Processing Unit	RWIS-CPU
Road Weather Information System – Remote Processing Unit	RWIS-RPU
Traffic Monitoring Station (Future ILD or PAD)	TMS
Vehicle Detection System	VDS
Variable Message Sign	VMS
Weigh-in-Motion System (Piezoelectric)	WIM-Piezo
Weigh-in-Motion System (Bending Plate)	WIM-BP

Many of these individual elements shown in Table 2 are typically integrated into larger systems that support ITS functions such as traffic management, traveler information etc. Table 3 shows both existing and planned ITI systems that were considered in this study.

Table 3. Existing and Planned ITI Systems in Arizona

EXISTING	PLANNED
Phoenix FMS Phases 1-4	Phoenix FMS Phases 5-17
RWIS on I-40	Tucson FMS
Stand-alone VMSS	Rural ITI Phases 1-26
Statewide WIM sites	AZTech MDI (Only ADOT Components)
Highway Closure & Restriction System	

3.2 ITI OPERATING RESOURCE FORECASTING MODEL

This model applies annual operating costs for each category of ITI element on the anticipated statewide ITI inventory determined for each year. The statewide ITI inventory was developed using information on the existing ITI inventory that is adjusted by additional ITI elements deployed each year due to new ITS projects launched statewide. The deployment of new ITI elements were based on ADOT's ITS Project Life Cycle Plan ⁽²⁾. Operating costs associated with ITI devices consist primarily of power, telecommunication and operating personnel costs.

For Phoenix TOC and Flagstaff TOC, the operating costs have been addressed separately and include personnel requirements to support the TOC function. As much as possible operating costs used in the forecasts were historical data from PECOS. In the absence of reliable local historical cost data, data from other state DOTs were utilized. In particular, Washington State DOT provided useful information on operating costs for the Surveillance Control and Driver Information (SC&DI) system ⁽³⁾. Other data were obtained from Minnesota ⁽⁴⁾ and Virginia ⁽⁵⁾. The basis used in this study for generating ITI operating cost forecasts is shown in Table 4.

Figure 1 depicts the model used for forecasting annual ITI operating resource requirements.

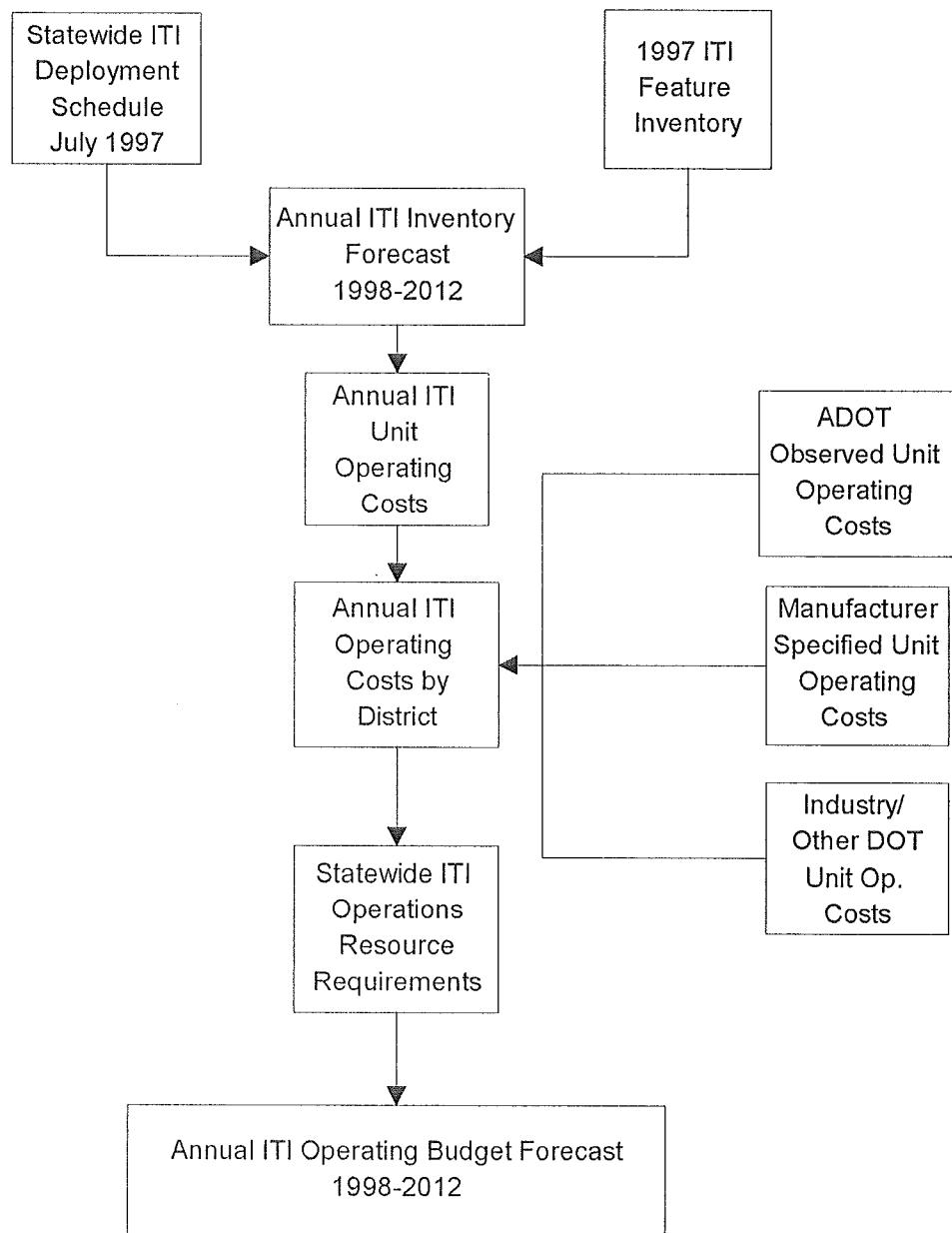


Figure 1. ITI OPERATING RESOURCE FORECASTING MODEL

Table 4. Average Costs for Operating ITI Elements

ITI Element	Average Annual Operating Cost (\$)	Basis/Data Source
AVC – Piezoelectric	98	ADOT/ATRC
CCTV	23	WSDOT
ILD	38	WSDOT
Node Room	984	WSDOT
PAD	38	Assumed same as ILD
Power Cabinet	n/a	
Ramp Meter/ILD	45	WSDOT
Ramp Meter/PAD	45	WSDOT
RWIS-CPU	500	National Survey
RWIS-RPU	170	Assumed 10% of CPU cost
TMS	38	Assumed same as ILD
VDS	45	Assumed same ad ILD
VMS	1035	ADOT
WIM – Piezoelectric	98	ADOT/ATRC
WIM – Bending Plate	98	ADOT/ATRC

3.3 ITI MAINTENANCE RESOURCE FORECASTING MODEL

When developing the maintenance resource model, all of the factors that have a significant bearing on maintenance costs were taken into consideration. The resulting model, therefore, represents a comprehensive approach for accurate estimation of ITI maintenance costs. An additional feature was proposed for the model that would have built in an equipment degradation model for estimation of ITI equipment replacement needs. However, that model was not developed due to lack of adequate data to calibrate such a model at the present time. The maintenance costs forecast by this model include all maintenance activities associated with the ITI elements, and costs associated with their replacement at the end of the useful lifecycle. All new ITI equipment is covered for a limited period by manufacturer provided equipment warranties. These warranties only cover the cost of replacement parts during the warranty period. Therefore, new equipment still under warranty incurred only labor and equipment costs associated with unscheduled maintenance.

Figure 2 depicts the ITI maintenance resource-forecasting model. Key input data for this model are the annual ITI inventory forecast and the annual maintenance resource requirements for each ITI element.

All maintenance activities are divided into two categories. Scheduled Maintenance or Preventive Maintenance (PM) involves routine cleaning, adjustments and minor repair. The second category, Unscheduled Maintenance or Demand Maintenance (DM) involves responding to equipment breakdowns, malfunctions etc. The PECOS system contains Performance Guidelines that define standard labor, equipment, material quantities and labor hours for various PM activities. These guidelines also specify PM frequencies for various maintenance features. Standards for PM have been established for those ITI elements that have already been incorporated into

PECOS. Annual PM resource requirements for specific ITI elements were obtained directly from these guidelines and accurately depicts PM requirements. The sum of PM and DM costs associated with any ITI element reflects the total maintenance cost component for that element.

The PECOS system also gathers data on DM through program and activity codes that have been established for different equipment. However, it was not possible to obtain PECOS cost data on DM at the same level detail as that available for PM. A limited amount of DM data were provided to the project team by ADOT (6) and were used as the basis of DM costs for all ITI elements.

The cost of any maintenance activity is affected by the amount of travel required to carry out that activity. It would depend on the location of the ADOT maintenance units that execute PM and DM on statewide ITI elements. An accurate accounting of such future costs were considered beyond the scope of this effort. Therefore, additional maintenance costs that may be associated with travel to future remote ITI sites were not included in the cost forecasts.

The degradation of ITI elements with age and their eventual replacement costs were addressed by assuming that once an element reached the end of its useful life, it would be replaced by an equivalent ITI element. Costs related to periodic repair and replacement of components within each element were assumed to be captured by the annual DM costs. Historical DM costs from PECOS were used to generate average annual DM costs for each type of ITI element in service. These average costs were then applied across the ITI inventory. The influence of the age distribution of ITI inventory on DM costs was not explicitly considered due to lack of historical data to establish reliable relationships.

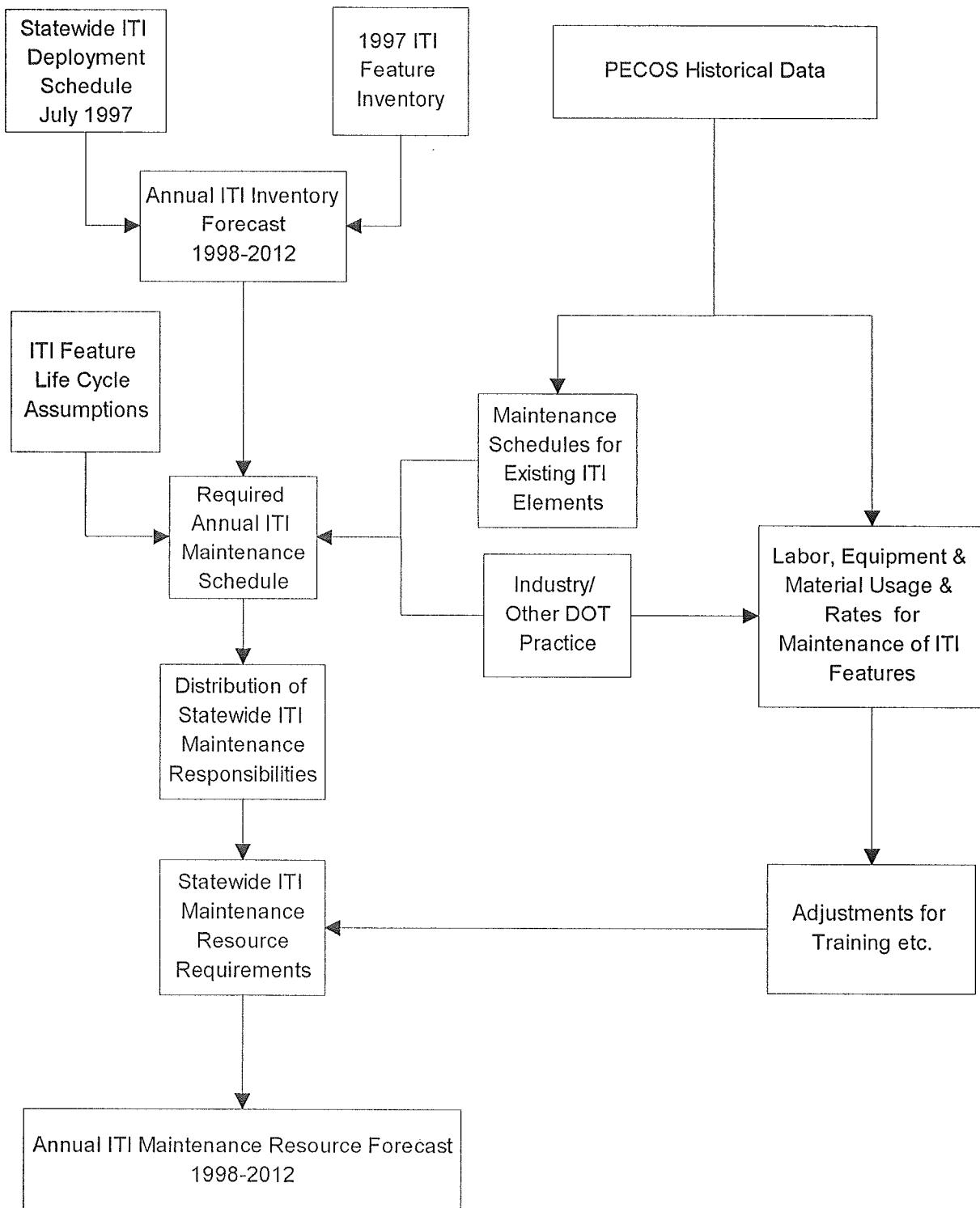


Figure 2. ITI MAINTENANCE RESOURCE FORECASTING MODEL

4.0 IDENTIFICATION OF ITI ELEMENTS

The reliability and accuracy of future O&M cost forecasts depend largely on the accuracy with which equipment inventories for future years are determined. Therefore, proper identification of equipment or ITI elements that are currently deployed and those that are planned for future deployment across the state was required for estimating future maintenance needs. Different types of ITI elements have different operating costs and maintenance needs, which also change over time as these equipment age. The age of equipment in any given year was determined from the install date for consideration in the life cycle analysis, which incorporated equipment replacement.

In order that the O&M cost estimates accurately depict expected future costs, an effort was made to identify the key ITI elements that would influence these costs. As is common with many electronic devices, many ITI elements consist of multiple components that each has their own O&M cost characteristics. However, for the purpose of this study it was deemed sufficient to identify O&M resource needs by the key ITI elements. The selection of these key elements was primarily based on how preventive or scheduled maintenance activities and demand or unscheduled maintenance activities are carried out and recorded by the agency. For the purpose of this study groups of field components are considered as ITI maintenance units. This is consistent with the manner in which cost data on ITI maintenance activities are entered into PECOS. The terminology and acronyms used for ITI elements that in fact refer to groups of components associated with that element are defined as follows:

Variable Message Sign or VMS: This element consists of a FDS/Sylvia sign enclosure that is mounted on an overhead structure over the freeway, a Type 344 roadside cabinet that houses the sign controller; a modem, a communication relay and a voice telephone.

Inductive Loop Detector or ILD: These are vehicle detector stations spaced at 1/3 mile along the freeway. Each station typically consists of two inductive loops in each of three lanes, a Type 341 cabinet, a 179 controller, a modem, a communication relay and a voice telephone

Passive Acoustic Detectors or PAD: This element is essentially the same as an ILD station with the loops replaced by a group of acoustic detectors.

Traffic Monitoring Station or TMS: This term refers to future vehicle detection stations and could refer to either ILD or PAD due to present uncertainty about the type of detection technology to be utilized in the future.

Ramp Meter/ILD: These are ramp meters that also function as mainline detectors (and are linked to a group of six mainline detectors located either upstream or downstream of a ramp terminal). This element typically consists of a Type 341 cabinet, a 179 controller, four loops on the ramp, ramp metering signal and the six loops on the mainline.

Close Circuit Television (CCTV): This element typically consists of a camera, drive and housing, Type 343 or Type 341 cabinet, camera controller and multimode fiber communication link to the node.

Vehicle Detection System or VDS: This element consists of future automatic vehicle counting systems to be located at existing permanent traffic count stations. These elements are planned to be deployed as part of rural ITS.

Road Weather Information System – Remote Processing Unit (RWIS-RPU): This element consists of a sensor located on the road pavement, roadside weather station, controller, a cabinet, and communication link

Weigh-in-Motion – Piezo or Bending Plate (WIM-Piezo or WIM-BP): This element typically consists of a group of piezoelectric- or bending plate-based sensors located in a number of lanes of the highway, a roadside controller, modem

Automatic Vehicle Classifier (AVC): This element has the same components as a WIM-Piezo but collects data on vehicle classification.

Other technologies that are currently being considered for future deployment include:

- Highway Advisory Radio (HAR)
- Image-based Vehicle Detection Systems
- Emergency Call Boxes

4.1 METHODOLOGY TO DEVELOP ANNUAL STATEWIDE ITI INVENTORY

The annual statewide ITI inventory was developed using the following information sources:

- Data on Existing ITI ⁽⁷⁾.
- ADOT's ITS Project Life Cycle Plan ⁽²⁾.
- Rural Intelligent Transportation Infrastructure Plan ⁽⁸⁾.
- List of WIM Sites and equipment provided by ATRC ⁽⁹⁾.
- RWIS system description from I-40 ITS Strategic Plan ⁽¹⁰⁾.

Data on existing ITI provided detailed information on the following existing elements in the Phoenix FMS:

- ILD
- CCTV Cameras
- VMS
- Power cabinets
- Node Rooms
- Ramp Meters

Since no installed year information was available for ITI elements, this information was based on when FMS Phases were known to have been completed. From an O&M viewpoint, an ITI element was considered to enter service in the year system acceptance testing was completed by ADOT. Similarly, ITI elements planned to be deployed by future FMS and Rural ITI phases are also considered to enter service after acceptance testing.

ADOT's Project Life Cycle Plan provided information on Phoenix FMS, Tucson FMS and Rural ITI deployment schedules.

The Rural ITI Plan provided detailed information on the type of equipment, planned deployment year and location.

Although sufficiently accurate ITI inventory data were available for all future phases of Rural ITI, similar information was not available for future phases of Phoenix and Tucson FMS projects. This limitation was overcome by utilizing general criteria used by ADOT for estimating the costs of future FMS phases. The project team learned from ADOT that the estimated costs of future FMS phases had been based on purely historical FMS implementation costs and similar experiences of other state DOTs⁽¹¹⁾. They were based on per mile gross FMS construction costs. The accuracy of following this approach for FMS planning purposes had been validated by recent contract bids received by ADOT on FMS Phase 4. This planning approach is based on the assumption that future FMS configuration such as vehicle detector spacing on the freeway, CCTV camera spacing, ramp metering locations, and variable message sign spacing would closely follow existing FMS configuration. Since the Phoenix FMS configuration is well defined and accepted by the agency, it was considered reasonable to assume that the number of ITI features to be installed on future FMS phases would follow the observed system wide averages closely. Table 5 depicts criteria currently used to estimate ITI elements for future FMS phases.

Table 5. Future ITI Element Estimation Criteria for FMS

ITI Element	Criteria
CCTV cameras	One for every freeway mile
ILDs or PADs	One every 1/3 of mile in each direction
VMS	One every 2.5 miles in each direction of the freeway
Ramp Meters	One at every on-ramp
Traffic Interchange Controllers	One at every interchange

Source: (11)

The 1/3-mile criteria shown above for ILD or PAD spacing on urban freeways is being evaluated by ADOT with a possible change to 1/2 mile spacing for future FMS phases.

5.0 ANNUAL STATEWIDE ITI INVENTORY

The annual statewide ITI inventory for the years 1998-2012 was developed following the methodology described in Section 4.1. Appendix E contains annual ITI inventory data compiled for each ADOT organization.

5.1 PHOENIX FMS

All of the phases of the Phoenix FMS as described in the ITS Project Life Cycle Plan ⁽²⁾ were considered in this study. This included phases that were already implemented and others that are planned for future construction. Identification of both existing and future ITI components related to FMS was a key step for developing an accurate forecast of the ITI inventory. Inventory information provided by ADOT staff at the FMS TOC identified nearly all ITI features that have been implemented by past FMS phases.

The entire ITI feature inventory, for the Phoenix FMS, used on this project for generating O&M costs is based on:

1. ITI elements implemented as of June 1997
2. ITI elements planned for deployment on future FMS Phases

The inventory of existing ITI was compiled from an equipment inventory list provided by ADOT ⁽⁷⁾. This document provided detailed information on ITI equipment and their locations. The locations of equipment were used to identify the associated FMS phase and therefore its approximate installation date. A number of exceptions to this were observed and accounted for accurately in the inventory data. For example, ramp metering at 12 interchanges along US 60 was installed prior to FMS Phase 7b. The installed dates for ITI are used in the model to determine the age of ITI features at any given year.

5.2 PHOENIX TOC

The entire Phoenix TOC was considered as a single entity from an O&M viewpoint. This approach was considered adequate for the purpose of this study. The study utilized O&M cost projections compiled by ADOT staff for the years 1996 – 2001. These costs had been based on historical data and anticipated future O&M activities at the TOC. The following adjustments were made to ADOT cost projections for the TOC:

- An adjustment to match previous ADOT projections to actual cost data for 1998.
- Linear cost increment projections for the years beyond 2001.

5.3 TUCSON FMS

The Tucson FMS is the second urban FMS planned to be implemented in Arizona. Current information on the Tucson FMS indicate that it will be constructed in three phases. Phase 1 of the Tucson FMS is currently under design and no details on specific ITI features were available

for this project. For the purpose of determining the number and type of ITI features deployed, the future ITI criteria from Table 5 were used.

5.4 TUCSON TOC

The Tucson TOC is planned to be located in the City of Tucson downtown facility with the primary responsibility for its operation during normal working hours to be borne by the City of Tucson. Details on its future operation were not available for this study. For the purpose of this study, the majority of operating and maintenance costs associated with the TOC were assumed to be borne entirely by the City of Tucson. During the first four years of its operation, the Phoenix TOC staff is expected to provide operational support. Costs associated with this support have been included in the Phoenix TOC cost forecast shown in Appendix A.

5.5 FLAGSTAFF TOC

The future Flagstaff TOC is intended to be operational only during those times when there are highway closures that affect two or more ADOT maintenance organizations during regular working hours. Functions such as placing messages on Variable Message Signs is planned to be controlled from the Phoenix TOC. With the TOC function being supported by the Phoenix TOC, minimum operational and maintenance costs are anticipated for this facility⁽¹²⁾. At present the only RWIS-CPU in the state has is located at Flagstaff. Maintenance personnel in Flagstaff have received limited training on RWIS operation and maintenance. It is likely that in the future the agency will rely on the expertise in Flagstaff to support planned RWIS expansion elsewhere. The need to account for O&M training needs was repeatedly emphasized by TAC members. These factors were considered in developing the O&M cost forecast for Flagstaff TOC. Anticipated operational support from the Phoenix TOC and costs associated with that effort have been included in Appendix A.

5.6 AZTECH MODEL DEPLOYMENT INITIATIVE (MDI)

As a result of the AZTech MDI, a number of new equipment as well as new operational functions is expected to be introduced to the Phoenix TOC. The following is a brief summary of these anticipated additions⁽¹³⁾:

- AZTech (or HCRS) server
- ETAK server - ETAK Inc. will be solely responsible for this device
- Communications backbone - USWest SONET OC-3 backbone to Scottsdale; Tempe; and Mesa
- T-1 leased communication lines to Glendale and Gilbert
- Numerous Routers and Codecs installed at TOC and at other TOCs
- SONET fiberoptic communication link to City of Phoenix.

It is expected that ADOT will be responsible for providing support for the O&M of these devices from July 1, 1998. Estimated operational costs to be borne by ADOT have been estimated at \$125,000 per year⁽¹⁴⁾.

5.7 STATEWIDE RURAL ITI

Statewide rural ITI deployment information used in this study closely followed the Rural ITI Deployment Plan⁽⁸⁾. Existing ITI elements consisted only of the RWIS with RPUs along I-40 and the CPU located at the ADOT Flagstaff District Office.

Summaries of ITI inventory by each district were prepared and distributed to the districts for review and verification. Based on feedback received from the districts, a few changes to the original schedule were noted and incorporated in the ITI inventory database.

5.8 WEIGH-IN-MOTION SITES AND AUTOMATED VEHICLE CLASSIFICATION SITES

There are two types of vehicle detection and measuring devices installed across the state. Weigh-in-Motion (WIM) sites that detect and record the type of vehicle and its axle weights, and Automated Vehicle Classification (AVC) sites that detect and record only the type of vehicle. Each of these sites consists with the following components:

- sensors installed on the roadway;
- a data acquisition unit installed in a cabinet; and,
- power supply and communication links to the unit.

Both WIM and AVC devices continuously gather data on traffic passing by the site and maintains a record of vehicles. A number of WIM and AVC sites have been installed at or near Long Term Pavement Performance (LTPP) experimental pavement sites of the Strategic Highway Research Program (SHRP). These sites are maintained and operated by the ADOT unit, Arizona Transportation Research Center. A second group of WIM and AVC sites are operated and maintained by the Data Team of ADOTs Transportation Planning Group.

The O&M costs used in the analysis and the replacement costs are based on historical data provided by ATRC⁽¹⁴⁾.

5.9 HIGHWAY CLOSURE AND RESTRICTION SYSTEM (HCRS)

ADOT has begun installing HCRS terminals at each district engineer's office. Current ADOT plans indicate that some HCRS terminals will be located in facilities owned and operated by agencies such as Department of Public Safety, National Forest Service, and also in cities such as Tempe and Scottsdale. This study has considered that all O&M costs of HCRS terminals located in non-ADOT facilities will be borne by the host agency. The O&M responsibilities for HCRS stations in ADOT facilities are being handled by the ADOT TIR group and have not been included in the O&M cost projections. This is based on information on the operation and future plans for HCRS provided by ADOT⁽¹⁵⁾.

5.10 INTERSTATE ROUTE 40 ADVANCED TRAVELER INFORMATION SYSTEM (ATIS) KIOSKS

A number of I-40 ATIS kiosks are planned to be installed as part of a National Rural ITS grant awarded to Arizona. Information made available to the project indicated that the maintenance and operation of these kiosks would not be the responsibility of ADOT. Therefore, these kiosks have not been considered in the statewide ITI O&M cost forecast.

6.0 COST BASIS AND ASSUMPTIONS

The cost forecasting process described in Chapter 3 was followed in generating future annual ITI O&M costs and man-hour estimates. In doing so, the cost basis shown in Table 6 was used. The following variables were used to determine the annual O&M cost of each ITI element considered.

Replacement Cycle: This was the assumed life cycle in years for each ITI element. The figures used for each element were based on feedback received from TAC members and other ADOT staff members who are familiar with equipment repair and breakdown history.

Warranty Period: All new equipment has a limited warranty period during which the contractor or manufacturer bears responsibility for repair or replacement of parts.

Preventive Maintenance (PM): All PM costs were based on historical PECOS data and performance guidelines. PM was broken down into four components: labor cost, equipment cost, material cost and man-hours. Annual maintenance frequency specified for each element was incorporated into the PM cost components and man-hour estimate. Table 7 shows the PECOS program and activity codes that formed the basis for these costs.

Demand Maintenance (DM): DM costs were based on a limited amount of historical PECOS data. Some assumptions were made regarding DM costs for elements for which there was no PECOS data. These assumptions and the sources for this data are shown in Table 7.

Replacement Cost: The replacement costs used for each ITI element reflected the current cost of a new unit. Equipment costs were assumed to remain constant.

Operating Cost: The costs of operating ITI elements were obtained from ADOT data and data from other state DOTs.

Table 6. Cost Basis for Annual ITS O&M Forecasts

Equipment	Replacement Cycle (yrs)	Warranty Period (yrs)	Preventive Maintenance (PM)				Demand Maintenance (DM)				Replace. Cost \$	Operating Cost \$	Total Annual Cost \$	
			Labor \$	Equip. \$	Materials \$	Man-hrs	Labor \$	Equip. \$	Materials \$	Man-hrs				
AVC-Piezo	3	1	167	167	5	167	167	167	5	10000	98	1100	10	
CCTV	7	1	651	419	8	163	105	162	2	17000	23	2170	10	
ILD Cabinet	10	1	361	268	51	4.5	29	53	14	1	9000	38	814	5.5
Node Room	8	0	148	232	0	5	358	179	358	24	30000	1035	2310	29
PAD cabinet	10	1	361	268	51	4.5	29	53	14	1	9000	45	821	5.5
Power Cabinet	15	0	148	232	0	5	90	45	90	6	2000	0	605	11
Ramp Meter/ILD	8	1	361	268	51	4.5	1023	840	963	38	15000	45	3551	42.5
Ramp Meter/PAD	8	1	723	536	103	4.5	1023	840	963	38	15000	45	4233	42.5
RWIS-CPU	10	2	2905	0	0	29	2950	0	0	29	5000	500	6355	58
RWIS-RPU	10	2	148	232	0	5	335	0	2613	10.5	20000	170	3498	15.5
TMS	10	1	361	268	51	4.5	29	53	14	1	9000	38	814	5.5
VDS	10	2	138	128	77	9	29	53	14	1	5000	45	484	10
VMS	15	10	593	696	0	15	369	250	570	25	105000	1035	3513	40
WIM-Piezo	3	1	934	934	10	934	934	934	934	10	10000	98	5702	20
WIM-Bending Plate	15	1	934	934	10	934	934	934	934	10	55000	98	5702	20

AVC-Piezo Automatic Vehicle Classification System - Piezoelectric Sensor Based

CCTV Close Circuit Television Camera

ILD Cabinet Inductive Loop Detector Cabinet

Node Room Communication Hub of FMS

PAD cabinet Passive Acoustic Detector

Power Cabinet Electric power source on the urban FMS

Ramp Meter/ILD Ramp Meter and ILD group

Ramp Meter/PAD Ramp Meter and PAD group

RWIS-CPU Road Weather Information System - Central Processing Unit

RWIS-RPU Road Weather Information System - Remote Processing Unit

TMS Traffic Monitoring Station (Future ILD or PAD)

VDS Vehicle Detection System (future vehicle count locations as part of Rural ITS)

VMS Variable Message Sign

WIM-Piezo Weigh-in-Motion System based on Piezoelectric sensors

WIM-Bending Plate Weigh-in-Motion System based on Bending Plate Sensors

Table 7. PECOS Activity Codes and Other Data Sources for PM and DM

ITI Element	Preventive Maintenance	Demand Maintenance
CCTV	510-5108	510-5205B
ILD	510-5104	510-5205A
TMS	510-5104	510-5205A
Node Room	510-5104	510-5205E
PAD	510-5104	510-5205A
Power Cabinet	510-5103	510-5205D
RM/ILD	510-5104	510-5205C
RM/PAD	510-5104	510-5205C
RWIS-CPU	Other DOT data	
RWIS-RPU	Flagstaff data	510-5205F
VMS	510-5103	510-5204
VMS – Major	510-5103	n/a
VMS – Minor	510-5103	n/a
WIM – Piezo	ATRC data	ATRC data
WIM – BP	ATRC data	ATRC data
AVC – Piezo	ATRC data	ATRC data

6.1 DISTRIBUTION OF O&M RESPONSIBILITIES

The O&M costs associated with ITI elements depend to some extent on where in the state the equipment are located and which organization or unit in ADOT is responsible for operating and maintaining them. At present, nearly all of the existing ITI elements are operated and maintained by staff at the Phoenix TOC. The only exception to this being the RWIS, which is operated and maintained by the Flagstaff district maintenance staff. However, with continued statewide deployment of new ITI elements, the O&M responsibilities for ITI devices may need to be located at some districts for effective operation and management of the overall system. Any such decentralization would certainly have an impact on future O&M costs. However, for the purpose of this study it was assumed that all O&M functions would be supported from the Phoenix TOC, with the exception of RWIS in Flagstaff.

6.2 ITI WARRANTIES

All new equipment installed as part of the Phoenix FMS construction contracts have a minimum six (6) month warranty against defects and failure, as provided by the contractor (16). Manufacturer provided warranties on FMS equipment installed by the contractor take effect immediately following the 60-day system acceptance testing, regardless of when such equipment may have been first installed. Such warranty periods commence from the time at which system is approved and accepted by ADOT. Warranty data on all ITI elements were taken into consideration in the cost forecasting process. Although there is no cost for material during the warranty period, labor and equipment costs that are typically incurred by ADOT were taken into consideration.

6.3 LIFE CYCLE COST CONSIDERATIONS

For each ITI element, a life cycle was assumed based on the experience on similar equipment in the Phoenix FMS. The analysis also assumed that at the end of this life cycle the equipment concerned would be replaced by an equivalent one with a similar life cycle and warranty.

6.4 EQUIPMENT UPGRADES & OBSOLESCENCE

Upgrades

All equipment upgrades were assumed to occur at the end of their life cycle.

Obsolescence

It was assumed that at the end of the design life of each ITI element would be replaced by an equivalent or an upgraded unit. The cost associated with replacing an original ITI element was considered a maintenance cost. Replacement costs were assumed to remain constant over the entire forecast period. Although the per unit costs of ITI equipment have decreased due to increased markets for them, the functionality of many newer devices seem to have increased in a manner that offsets any reductions in unit costs.

7.0 RESULTS

Annual operations costs were generated by the application of operational costs shown in Table 6 for each ITI element in service on a given year. Similarly, appropriate PM & DM rates for labor, equipment and material were applied to the entire statewide ITI inventory to generate the PM & DM costs. By developing a relational database that included each ITI element that is planned to be deployed during the period under study, it was possible to generate O&M costs by each district.

A summary of annual O&M cost forecast for ITI is shown in Table 8. This summary provides the total O&M costs and man-hours required by each ADOT organization to support ITI. Large variations in the O&M costs from one year to the next for any ADOT unit/organization shown in the columns of this table reflect additional costs incurred due to equipment replacement.

Detailed cost and man-hour forecasts are provided in the Appendices as follows:

Appendix A – Annual O&M Cost Forecast for the Phoenix TOC.

Appendix B – Annual O&M Cost Forecast for Flagstaff TOC

Appendix C – Statewide ITI O&M Resource Forecast by Year

Appendix D – Statewide ITI O&M Resource Forecast by ADOT Organization

Appendix E – Statewide ITI Inventory Forecast (excluding Phoenix and Flagstaff TOC)

Table 8. Annual O&M Cost Forecasts for IITI in Arizona

Year		ATRC	TPG	Phoenix FMS	Phoenix TOC	Tucson FMS	Flagstaff TOC	Globe	Holbrook	Kingman	Prescott	Safford	Tucson	Yuma	Year Total	
1998	Costs	\$89,728	\$36,412	\$1,106,326	\$1,386,436	\$0	\$42,325	\$26,330	\$0	\$2,655	\$0	\$5,886	\$7,636	\$0	\$2,703,754	
	Man-Hrs	370	140	7820.5	0	333	0	46.5	0	80	111	0	0	0	8901	
1999	Costs	\$89,728	\$36,412	\$385,266	\$1,588,271	\$166,054	\$54,982	\$27,695	\$0	\$9,426	\$0	\$5,886	\$7,636	\$0	\$2,871,376	
	Man-Hrs	370	140	9070.5	1879	508.5	0	142	0	80	111	0	0	0	12301	
2000	Costs	\$268,885	\$110,474	\$997,274	\$1,615,958	\$192,246	\$62,821	\$28,596	\$0	\$17,265	\$8,829	\$5,886	\$12,882	\$0	\$3,221,116	
	Man-Hrs	370	140	10217.5	1879	508.5	0	142	120	80	111	0	0	0	13568	
2001	Costs	\$89,728	\$36,412	\$1,450,480	\$1,707,649	\$192,246	\$65,434	\$29,536	\$0	\$33,132	\$17,658	\$5,886	\$12,882	\$8,829	\$0	\$3,649,872
	Man-Hrs	370	140	12960	1879	508.5	0	339.5	240	80	111	120	0	0	16748	
2002	Costs	\$89,728	\$36,412	\$1,991,915	\$1,771,694	\$192,246	\$71,917	\$30,515	\$53,210	\$39,018	\$18,543	\$5,886	\$18,758	\$8,829	\$0	\$4,280,781
	Man-Hrs	370	140	15275	1879	610.5	93	419.5	255.5	80	191	120	0	0	19433.5	
2003	Costs	\$89,728	\$36,412	\$2,498,188	\$1,838,833	\$192,246	\$198,626	\$31,536	\$53,310	\$57,969	\$21,486	\$10,599	\$21,711	\$26,487	\$5,886	\$5,035,017
	Man-Hrs	370	140	16135	1879	610.5	93	499.5	295.5	151	231	360	80	80	20844.5	
2004	Costs	\$268,885	\$110,474	\$1,823,227	\$1,909,217	\$192,246	\$81,736	\$32,600	\$20,988	\$70,050	\$24,099	\$10,599	\$21,711	\$26,487	\$5,886	\$4,598,205
	Man-Hrs	370	140	18150	1879	850.5	93	688	295.5	151	231	360	80	80	22288	
2005	Costs	\$89,728	\$36,412	\$3,328,551	\$1,983,003	\$192,246	\$100,027	\$33,709	\$20,988	\$70,050	\$32,640	\$16,965	\$30,540	\$26,487	\$17,658	\$5,979,004
	Man-Hrs	370	140	19945.5	1879	850.5	93	688	422	151	351	360	240	240	25490	
2006	Costs	\$89,728	\$36,412	\$3,228,876	\$2,060,359	\$192,246	\$100,027	\$34,866	\$32,760	\$88,341	\$32,640	\$22,386	\$49,968	\$26,487	\$17,658	\$6,012,754
	Man-Hrs	370	140	23165.5	1879	850.5	93	253	688	422	211	622	360	240	22201	
2007	Costs	\$89,728	\$36,412	\$2,603,908	\$2,141,458	\$427,978	\$100,027	\$36,072	\$42,662	\$103,194	\$49,308	\$22,548	\$49,968	\$30,027	\$17,658	\$5,750,948
	Man-Hrs	370	140	24330.5	1879	850.5	93	353	838	542	211	622	422	240	30798	
2008	Costs	\$268,885	\$110,474	\$3,343,122	\$2,226,484	\$529,134	\$112,574	\$37,330	\$48,872	\$103,680	\$49,308	\$25,505	\$56,334	\$30,027	\$38,679	\$6,980,408
	Man-Hrs	370	140	25675.5	1879	980.5	980.5	433	838	542	251	622	422	515.5	32668.5	
2009	Costs	\$89,728	\$36,412	\$3,252,249	\$2,315,629	\$197,946	\$185,305	\$38,642	\$48,872	\$174,639	\$49,308	\$25,505	\$91,108	\$40,479	\$38,841	\$6,584,663
	Man-Hrs	370	140	27105.5	1879	1230.5	1230.5	433	1078	542	251	622	422	515.5	34588.5	
2010	Costs	\$89,728	\$36,412	\$7,308,233	\$2,409,094	\$719,134	\$142,692	\$40,010	\$49,812	\$149,123	\$65,865	\$25,505	\$59,938	\$40,479	\$41,468	\$11,177,513
	Man-Hrs	370	140	30690.5	1879	1230.5	1879	453	1301	744	251	777	422	515.5	38773.5	
2011	Costs	\$89,728	\$36,412	\$4,138,225	\$2,507,090	\$197,946	\$130,545	\$41,438	\$49,812	\$139,158	\$67,737	\$242,365	\$65,184	\$57,500	\$41,468	\$7,799,608
	Man-Hrs	370	140	33850.5	1879	1230.5	1879	453	1301	744	251	777	515.5	42091	42091	
2012	Costs	\$485,149	\$110,474	\$5,964,408	\$2,609,840	\$197,946	\$133,728	\$42,927	\$49,840	\$245,608	\$78,203	\$24,365	\$92,454	\$52,500	\$41,468	\$10,128,910
	Man-Hrs	370	140	33850.5	1879	1230.5	1879	453	1301	744	251	777	515.5	42091	42091	

Notes:

1. For Phoenix TOC and Flagstaff TOC man-hour estimates were not generated. All costs shown are in constant 1997 dollars.

8.0 CONCLUSIONS AND RECOMMENDATIONS

A systematic process was followed in developing the cost models for generating ITI O&M forecasts for Arizona. The project was slightly set back by the discovery that the ADOT maintenance management system, PECOS, could not support cost forecasting function. However, the alternative approach followed in executing this project, by developing a stand alone cost forecasting process utilizing PECOS data, may have resulted in some useful insights for future improvements to PECOS. The model used can be incorporated in a future version of PECOS, thus providing the ability to make accurate O&M cost forecasts for ITI. A desirable feature of any system such as PECOS would be its ability to link directly to multi-year project deployment schedules. Such ability would provide PECOS the ability to forecast future highway maintenance costs as well as personnel requirements to support levels of service desired from the transportation system

It was necessary to make a number of assumptions regarding both PM and DM costs, in order to be able to generate the forecasts according to the model process. The primary reason was lack of adequate PM and DM data on ITI elements. Although some ITI elements are already in PECOS many have not been incorporated as yet. It would be of value to the agency to have the key ITI elements incorporated in PECOS as soon as possible. Although having the elements in PECOS is important, an equally important consideration is having O&M activities accurately reported to PECOS.

During the course of this project, the project team interacted with many individuals who are actively involved in ITI O&M activities in Arizona. Some of the key concerns expressed by these individuals dealt with lack of personnel to address maintenance according PECOS guidelines. These concerns seem to be validated by the forecast man-hours for ITI O&M activities. A second but related concern is training required for O&M staff. This concern has been addressed by the inclusion of training needs in the Phoenix and Flagstaff TOC cost forecasts.

APPENDIX A

Annual O&M Cost Forecast for the Phoenix TOC.

Annual Operation and Maintenance Forecast
Phoenix TOC

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	
Building Maintenance	\$89,230	\$96,511	\$100,372	\$104,386	\$108,562	\$112,904	\$117,421	\$122,117	\$127,002	\$132,082	\$137,365	\$142,880	\$148,575	\$154,517	\$160,698	
Utilities	\$60,770	\$62,593	\$64,471	\$66,405	\$68,397	\$70,449	\$72,563	\$74,739	\$76,982	\$79,291	\$81,670	\$84,120	\$86,643	\$89,243	\$91,920	
Operating Supplies	\$237,336	\$245,765	\$258,053	\$270,956	\$284,504	\$298,729	\$313,665	\$329,348	\$345,816	\$363,107	\$381,262	\$400,325	\$420,341	\$441,358	\$463,426	
Operations Support	\$223,920	\$230,974	\$242,522	\$254,649	\$267,381	\$280,750	\$294,788	\$309,527	\$325,003	\$341,253	\$358,316	\$376,232	\$395,043	\$414,796	\$435,535	
EDP Support	\$497,680	\$548,692	\$576,127	\$604,933	\$635,180	\$666,939	\$700,286	\$735,300	\$772,065	\$810,668	\$851,202	\$893,762	\$938,450	\$985,372	\$1,034,641	
Software Licenses	\$236,300	\$236,300	\$236,300	\$236,300	\$236,300	\$236,300	\$236,300	\$236,300	\$236,300	\$236,300	\$236,300	\$236,300	\$236,300	\$236,300	\$236,300	
Training(out-of-state)	\$12,360	\$12,731	\$13,113	\$13,506	\$13,911	\$14,329	\$14,758	\$15,201	\$15,557	\$16,127	\$16,611	\$17,109	\$17,622	\$18,151	\$18,696	
Training (in-state)	\$28,840	\$29,705	\$30,596	\$31,514	\$32,460	\$33,433	\$34,436	\$35,470	\$36,534	\$37,630	\$38,759	\$39,921	\$41,119	\$42,353	\$43,623	
Total for TOC Operation	\$1,386,436	\$1,453,271	\$1,490,958	\$1,582,649	\$1,646,694	\$1,713,833	\$1,784,217	\$1,858,003	\$1,935,359	\$2,016,458	\$2,101,484	\$2,190,629	\$2,284,094	\$2,382,090	\$2,484,840	
AZ Tech Support																
Tucson Support	\$155,000	\$125,000	\$125,000	\$125,000	\$125,000	\$125,000	\$125,000	\$125,000	\$125,000	\$125,000	\$125,000	\$125,000	\$125,000	\$125,000	\$125,000	
Flagstaff Support	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	
TOTAL	\$1,386,436	\$1,588,271	\$1,615,958	\$1,707,649	\$1,771,694	\$1,838,833	\$1,909,217	\$1,983,003	\$2,060,359	\$2,141,458	\$2,226,484	\$2,315,629	\$2,409,094	\$2,507,090	\$2,609,840	-

Notes:

1. Costs for FY 2003 to FY 2011 are values projected from 1998-2002 ADOT cost estimates
2. Utility costs were assumed to increase at 3%/yr
3. Training costs were assumed to increase at 3%/yr

APPENDIX B

Annual O&M Cost Forecast for Flagstaff TOC

Annual Operation and Maintenance Forecast
Flagstaff TOC

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Utilities	\$5,150	\$5,305	\$5,464	\$5,628	\$5,796	\$5,970	\$6,149	\$6,334	\$6,524	\$6,720	\$6,921	\$7,129	\$7,343	\$7,563	\$7,790
Operating Supplies	\$5,000	\$5,513	\$5,788	\$6,078	\$6,381	\$6,700	\$7,036	\$7,387	\$7,757	\$8,144	\$8,552	\$8,979	\$9,428	\$9,900	\$10,395
Operations Support	\$5,000	\$5,513	\$5,788	\$6,078	\$6,381	\$6,700	\$7,036	\$7,387	\$7,757	\$8,144	\$8,552	\$8,979	\$9,428	\$9,900	\$10,395
Software Licenses	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
Training(out-of-state)	\$2,050	\$2,122	\$2,185	\$2,251	\$2,319	\$2,388	\$2,460	\$2,534	\$2,610	\$2,688	\$2,768	\$2,852	\$2,937	\$3,025	\$3,116
Training (in-state)	\$4,120	\$4,244	\$4,371	\$4,502	\$4,637	\$4,776	\$4,919	\$5,067	\$5,219	\$5,376	\$5,537	\$5,703	\$5,874	\$6,050	\$6,232
TOTAL	\$26,330	\$27,685	\$28,596	\$29,536	\$30,515	\$31,536	\$32,600	\$33,709	\$34,866	\$36,072	\$37,330	\$38,642	\$40,010	\$41,438	\$42,927

Notes:

1. Estimated costs were based on Phoenix TCC cost data
2. One person was assumed to be providing half-time support to the current(RWIS) and future TOC operational functions
3. Operational support is assumed to be provided by Phoenix TOC (See Appendix A)

APPENDIX C

Statewide ITI O&M Resource Forecast by Year

ADOT Unit	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By ADOT Unit		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
ATRC	23	0	0	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254	\$0	\$89,728	370.0		
Flagstaff Rural ITS	14	6	0	\$6,164	\$4,408	\$0	124.0	\$7,407	\$750	\$18,291	209.0	\$0	\$5,305	\$0	\$42,325	333.0		
Holbrook Rural ITS	3	3	0	\$444	\$696	\$0	15.0	\$1,005	\$0	\$0	31.5	\$0	\$510	\$0	\$2,655	46.5		
Phoenix FMS	446	0	20	\$171,842	\$142,010	\$54,303	2592.5	\$129,704	\$104,719	\$106,908	5228.0	\$340,000	\$56,840	\$1,106,326	7820.5			
Prescott Rural ITS	2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$0	\$5,886	80.0		
Safford Rural ITS	4	4	0	\$1,482	\$1,856	\$0	40.0	\$1,408	\$500	\$0	71.0	\$0	\$2,410	\$0	\$7,655	111.0		
TPG	8	0	0	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$0	\$784	\$0	\$36,412	140.0		
Totals:	500	13	20	\$201,635	\$170,879	\$74,820	3056.5	\$160,779	\$126,986	\$145,716	5844.5	\$340,000	\$70,173	\$1,240,958	\$901.0			

ADOT Unit	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By ADOT Unit		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
ATRC	23	0	0	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254	\$0	\$89,728	370.0		
Flagstaff Rural ITS	19	5	0	\$8,684	\$7,424	\$0	189.0	\$9,218	\$1,750	\$18,291	319.5	\$0	\$9,615	\$0	\$54,982	508.5		
Holbrook Rural ITS	6	3	0	\$1,778	\$2,320	\$0	50.0	\$2,078	\$500	\$0	92.0	\$0	\$2,750	\$0	\$9,426	142.0		
Phoenix FMS	543	97	0	\$207,027	\$171,285	\$63,390	3132.5	\$146,801	\$119,236	\$111,768	5938.0	\$0	\$65,759	\$0	\$885,266	9070.5		
Prescott Rural ITS	2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$0	\$5,886	80.0		
Safford Rural ITS	4	0	0	\$1,482	\$1,856	\$0	40.0	\$1,408	\$500	\$0	71.0	\$0	\$2,410	\$0	\$7,655	111.0		
TPG	8	0	0	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$0	\$784	\$0	\$36,412	140.0		
Tucson FMS	106	106	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$0	1248.0	\$0	\$13,956	\$0	\$166,054	1879.0		
Totals:	711	211	0	\$285,320	\$239,596	\$97,147	4327.5	\$212,966	\$170,207	\$150,576	7973.5	\$0	\$99,598	\$0	\$1,255,410	12301.0		

Year: 2000				Preventive Maintenance Costs				Demand Maintenance Costs				Replace Costs				Operating Costs				Totals By ADOT Unit			
ADOT Unit	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours		
ATRC	23	0	19	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$3,736	185.0	\$190,000	\$2,254	\$288,885	370.0								
Flagstaff Rural ITS	19	0	0	\$8,684	\$7,424	\$0	189.0	\$9,218	\$1,750	\$26,130	319.5	\$0	\$9,615	\$62,821	508.5								
Holbrook Rural ITS	6	0	0	\$1,778	\$2,320	\$0	50.0	\$2,078	\$500	\$7,839	92.0	\$0	\$2,750	\$17,265	142.0								
Kingman Rural ITS	3	3	0	\$1,779	\$2,088	\$0	45.0	\$1,107	\$750	\$0	75.0	\$0	\$3,105	\$8,829	120.0								
Phoenix FMS	624	81	0	\$235,818	\$195,186	\$70,673	3571.5	\$164,352	\$133,997	\$125,052	6646.0	\$0	\$72,196	\$997,274	10217.5								
Prescott Rural ITS	2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$5,886	80.0								
Safford Rural ITS	4	0	0	\$1,482	\$1,856	\$0	40.0	\$1,408	\$500	\$5,226	71.0	\$0	\$2,410	\$12,882	111.0								
TPG	8	0	8	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$0	70.0	\$80,000	\$784	\$110,474	140.0								
Tucson FMS	106	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$26,192	1248.0	\$0	\$13,956	\$192,246	1879.0								
Totals:	795	84	27	\$315,890	\$265,585	\$104,430	4811.5	\$231,624	\$185,718	\$194,175	8756.5	\$270,000	\$109,140	\$1,616,562	13568.0								

Year: 2001				Preventive Maintenance Costs				Demand Maintenance Costs				Replace Costs				Operating Costs				Totals By ADOT Unit			
ADOT Unit	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours		
ATRC	23	0	0	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254	\$89,728	370.0								
Flagstaff Rural ITS	19	0	0	\$8,684	\$7,424	\$0	189.0	\$9,218	\$1,750	\$28,743	319.5	\$0	\$9,615	\$65,434	508.5								
Holbrook Rural ITS	14	8	0	\$4,297	\$5,568	\$0	120.0	\$4,860	\$1,250	\$10,452	219.5	\$0	\$6,705	\$33,132	339.5								
Kingman Rural ITS	6	3	0	\$3,558	\$4,176	\$0	90.0	\$2,214	\$1,500	\$0	150.0	\$0	\$6,210	\$17,658	240.0								
Phoenix FMS	862	238	12	\$323,851	\$267,301	\$92,777	4891.0	\$198,201	\$163,757	\$129,924	8069.0	\$180,000	\$94,669	\$1,450,480	12960.0								
Prescott Rural ITS	2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$5,886	80.0								
Safford Rural ITS	4	0	0	\$1,482	\$1,856	\$0	40.0	\$1,408	\$500	\$5,226	71.0	\$0	\$2,410	\$12,882	111.0								
TPG	8	0	0	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$0	70.0	\$0	\$784	\$36,412	140.0								
Tucson FMS	106	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$26,192	1248.0	\$0	\$13,956	\$192,246	1879.0								
Tucson Rural ITS	3	3	0	\$1,779	\$2,088	\$0	45.0	\$1,107	\$750	\$0	75.0	\$0	\$3,105	\$8,829	120.0								
Totals:	1047	252	12	\$410,000	\$345,124	\$126,534	6291.0	\$270,469	\$217,728	\$221,054	10457.0	\$180,000	\$141,778	\$1,912,667	16743.0								

Year: 2002	ADOT Unit	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By ADOT Unit			
					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours		
ATRC	23	0	0	0	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254	\$89,728	370.0
Flagstaff Rural ITS	24	5	0	0	\$9,869	\$9,048	\$0	224.0	\$10,927	\$2,000	\$28,743	386.5	\$0	\$11,330	\$71,917	610.5
Globe Rural ITS	6	6	0	0	\$888	\$1,392	\$0	30.0	\$2,010	\$0	\$0	63.0	\$0	\$1,020	\$5,310	93.0
Holbrook Rural ITS	16	2	0	0	\$5,483	\$6,960	\$0	150.0	\$5,598	\$1,750	\$10,452	269.5	\$0	\$8,775	\$39,018	419.5
Kingman Rural ITS	7	1	0	0	\$3,706	\$4,408	\$0	95.0	\$2,549	\$1,500	\$0	160.5	\$0	\$6,380	\$18,543	255.5
Phoenix FMS	1072	210	28	0	\$394,581	\$326,075	\$106,897	5956.0	\$228,247	\$190,403	\$162,777	9319.0	\$476,000	\$106,935	\$1,991,915	15275.0
Prescott Rural ITS	2	0	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$5,886	80.0
Safford Rural ITS	6	2	0	0	\$2,668	\$3,248	\$0	70.0	\$2,146	\$1,000	\$5,226	121.0	\$0	\$4,480	\$18,768	191.0
TPG	8	0	0	0	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$0	\$784	\$36,412	140.0
Tucson FMS	106	0	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$26,192	1248.0	\$0	\$13,956	\$192,246	1879.0
Tucson Rural ITS	3	0	0	0	\$1,779	\$2,088	\$0	45.0	\$1,107	\$750	\$0	75.0	\$0	\$33,105	\$8,829	120.0
Totals:	1273	226	28	0	\$485,323	\$409,930	\$140,654	7486.0	\$306,045	\$245,624	\$253,907	11947.5	\$476,000	\$161,089	\$2,478,572	19433.5

Year: 2003	ADOT Unit	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By ADOT Unit			
					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours		
ATRC	23	0	0	0	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254	\$89,728	370.0
Flagstaff Rural ITS	24	0	8	0	\$9,869	\$9,048	\$0	224.0	\$10,927	\$2,000	\$10,452	386.5	\$145,000	\$11,330	\$198,626	610.5
Globe Rural ITS	6	0	0	0	\$888	\$1,392	\$0	30.0	\$2,010	\$0	\$0	63.0	\$0	\$1,020	\$5,310	93.0
Holbrook Rural ITS	18	2	0	0	\$6,669	\$8,352	\$0	180.0	\$6,336	\$2,250	\$23,517	319.5	\$0	\$10,845	\$57,969	499.5
Kingman Rural ITS	8	1	0	0	\$4,299	\$5,104	\$0	110.0	\$2,918	\$1,750	\$0	185.5	\$0	\$7,415	\$21,486	295.5
Phoenix FMS	1144	72	51	0	\$420,259	\$347,485	\$113,227	6350.0	\$239,317	\$199,929	\$149,892	9785.0	\$915,000	\$113,079	\$2,498,188	16135.0
Prescott Rural ITS	5	3	0	0	\$2,075	\$2,552	\$0	55.0	\$1,777	\$750	\$0	96.0	\$0	\$3,445	\$10,599	151.0
Safford Rural ITS	7	1	0	0	\$3,261	\$3,944	\$0	85.0	\$2,515	\$1,250	\$5,226	146.0	\$0	\$5,515	\$21,711	231.0
TPG	8	0	0	0	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$0	\$784	\$36,412	140.0
Tucson FMS	106	0	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$26,192	1248.0	\$0	\$13,956	\$192,246	1879.0
Tucson Rural ITS	9	6	0	0	\$5,337	\$6,264	\$0	135.0	\$3,321	\$2,250	\$0	225.0	\$0	\$9,315	\$26,487	360.0
Yuma Rural ITS	2	2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$5,886	80.0
Totals:	1360	87	59	0	\$519,006	\$440,852	\$146,984	8085.0	\$322,582	\$258,400	\$235,796	12759.5	\$1,060,000	\$181,028	\$3,164,648	20844.5

Year: 2004	ADOT Unit	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By ADOT Unit		
					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours	
ATRC	23	0	19	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$3,736	185.0	\$190,000	\$2,254	\$268,885	
Flagstaff Rural ITS	30	6	0	\$13,427	\$13,224	\$0	314.0	\$13,141	\$3,500	\$20,904	536.5	\$0	\$17,540	\$81,736	850.5
Globe Rural ITS	6	0	0	\$888	\$1,392	\$0	30.0	\$2,010	\$0	\$15,678	63.0	\$0	\$1,020	\$20,988	93.0
Holbrook Rural ITS	27	9	0	\$8,891	\$11,368	\$0	245.0	\$9,419	\$2,750	\$23,517	443.0	\$0	\$14,105	\$70,050	688.0
Kingman Rural ITS	8	0	0	\$4,299	\$5,104	\$0	110.0	\$2,918	\$1,750	\$2,613	185.5	\$0	\$7,415	\$24,099	295.5
Phoenix FMS	1289	145	0	\$472,692	\$390,796	\$126,636	7145.0	\$269,450	\$225,398	\$212,733	11005.0	\$0	\$125,522	\$1,823,227	18150.0
Prescott Rural ITS	5	0	0	\$2,075	\$2,552	\$0	55.0	\$1,777	\$750	\$0	96.0	\$0	\$3,445	\$10,599	151.0
Safford Rural ITS	7	0	0	\$3,261	\$3,944	\$0	85.0	\$2,515	\$1,250	\$5,226	146.0	\$0	\$5,515	\$21,711	231.0
TPG	8	0	8	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$0	70.0	\$80,000	\$784	\$110,474	140.0
Tucson FMS	106	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$26,192	1248.0	\$0	\$13,956	\$192,246	1879.0
Tucson Rural ITS	9	0	0	\$5,337	\$6,264	\$0	135.0	\$3,321	\$2,250	\$0	225.0	\$0	\$9,315	\$26,487	360.0
Yuma Rural ITS	2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$5,886	80.0
Totals:	1520	160	27	\$577,219	\$491,355	\$160,393	9035.0	\$358,012	\$285,869	\$310,599	14253.0	\$270,000	\$202,941	\$2,656,388	23288.0

Year: 2005	ADOT Unit	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By ADOT Unit		
					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours	
ATRC	23	0	0	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254	\$89,728	370.0
Flagstaff Rural ITS	30	0	0	\$13,427	\$13,224	\$0	314.0	\$13,141	\$3,500	\$39,195	536.5	\$0	\$17,540	\$100,027	850.5
Globe Rural ITS	6	0	0	\$888	\$1,392	\$0	30.0	\$2,010	\$0	\$15,678	63.0	\$0	\$1,020	\$20,988	93.0
Holbrook Rural ITS	27	0	0	\$8,891	\$11,368	\$0	245.0	\$9,419	\$2,750	\$23,517	443.0	\$0	\$14,105	\$70,050	688.0
Kingman Rural ITS	13	5	0	\$5,929	\$7,192	\$0	155.0	\$4,661	\$2,250	\$2,613	267.0	\$0	\$9,995	\$32,640	422.0
Phoenix FMS	1419	130	135	\$519,518	\$429,073	\$138,394	7842.5	\$296,962	\$248,819	\$233,209	12103.0	\$1,327,000	\$135,576	\$3,328,551	19945.5
Prescott Rural ITS	5	0	0	\$2,075	\$2,552	\$0	55.0	\$1,777	\$750	\$6,366	96.0	\$0	\$3,445	\$16,965	151.0
Safford Rural ITS	10	3	0	\$5,040	\$6,032	\$0	130.0	\$3,622	\$2,000	\$5,226	221.0	\$0	\$8,620	\$30,540	351.0
TPG	8	0	0	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$0	\$734	\$36,412	140.0
Tucson FMS	106	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$26,192	1248.0	\$0	\$13,956	\$192,246	1879.0
Tucson Rural ITS	9	0	0	\$5,337	\$6,264	\$0	135.0	\$3,321	\$2,250	\$0	225.0	\$0	\$9,315	\$26,487	360.0
Yuma Rural ITS	6	4	0	\$3,558	\$4,176	\$0	90.0	\$2,214	\$1,500	\$0	150.0	\$0	\$6,210	\$17,658	240.0
Totals:	1662	142	135	\$629,826	\$536,592	\$172,151	9882.5	\$389,850	\$311,540	\$372,513	15607.5	\$1,327,000	\$222,820	\$3,962,292	25490.0

Year: 2006	ADOT Unit	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By ADOT Unit			
					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours		
ATRC	23	0	0	0	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254	\$89,728	370.0
Flagstaff Rural ITS	30	0	0	0	\$13,427	\$13,224	\$0	314.0	\$13,141	\$3,500	\$39,195	536.5	\$0	\$17,540	\$100,027	850.5
Globe Rural ITS	10	4	0	0	\$3,260	\$4,176	\$0	90.0	\$3,486	\$1,000	\$15,678	163.0	\$0	\$5,160	\$32,760	253.0
Holbrook Rural ITS	27	0	0	0	\$8,891	\$11,368	\$0	245.0	\$9,419	\$2,750	\$41,808	443.0	\$0	\$14,105	\$88,341	688.0
Kingman Rural ITS	13	0	0	0	\$5,929	\$7,192	\$0	155.0	\$4,661	\$2,250	\$2,613	267.0	\$0	\$9,995	\$32,640	422.0
Phoenix FMS	1651	232	59	0	\$603,314	\$499,026	\$158,643	9131.5	\$343,718	\$288,332	\$223,167	14034.0	\$955,000	\$157,676	\$3,228,876	23165.5
Prescott Rural ITS	8	3	0	0	\$3,457	\$3,795	\$724	87.0	\$2,338	\$1,158	\$6,366	124.0	\$0	\$4,548	\$22,386	211.0
Safford Rural ITS	18	8	0	0	\$8,894	\$10,672	\$0	230.0	\$6,506	\$3,500	\$5,226	392.0	\$0	\$15,170	\$49,968	622.0
TPG	8	0	0	0	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$0	\$784	\$36,412	140.0
Tucson FMS	106	0	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$26,192	1248.0	\$0	\$13,956	\$192,246	1879.0
Tucson Rural ITS	9	0	0	0	\$5,337	\$6,264	\$0	135.0	\$3,321	\$2,250	\$0	225.0	\$0	\$9,315	\$26,487	360.0
Yuma Rural ITS	6	0	0	0	\$3,558	\$4,176	\$0	90.0	\$2,214	\$1,500	\$0	150.0	\$0	\$6,210	\$17,656	240.0
Totals:	1909	247	59	\$721,230	\$615,212	\$193,124	11363.5	\$441,527	\$353,961	\$380,762	17837.5	\$955,000	\$256,713	\$3,917,529	29201.0	

Year: 2007	ADOT Unit	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By ADOT Unit			
					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours		
ATRC	23	0	0	0	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254	\$89,728	370.0
Flagstaff Rural ITS	30	0	0	0	\$13,427	\$13,224	\$0	314.0	\$13,141	\$3,500	\$39,195	536.5	\$0	\$17,540	\$100,027	850.5
Globe Rural ITS	14	4	0	0	\$5,748	\$6,406	\$1,294	136.0	\$4,550	\$1,710	\$15,678	217.0	\$0	\$7,276	\$42,662	353.0
Holbrook Rural ITS	33	6	0	0	\$12,623	\$14,713	\$1,941	314.0	\$11,015	\$3,815	\$41,808	524.0	\$0	\$17,279	\$103,194	838.0
Kingman Rural ITS	16	3	0	0	\$7,708	\$9,280	\$0	200.0	\$5,768	\$3,000	\$10,452	342.0	\$0	\$13,100	\$49,308	542.0
Phoenix FMS	1731	80	9	\$632,402	\$523,159	\$165,926	9575.5	\$361,458	\$303,253	\$299,562	14755.0	\$153,000	\$165,148	\$2,603,908	24330.5	
Prescott Rural ITS	8	0	0	\$3,457	\$3,795	\$724	87.0	\$2,338	\$1,158	\$6,528	124.0	\$0	\$4,548	\$22,548	211.0	
Safford Rural ITS	18	0	0	\$8,894	\$10,672	\$0	230.0	\$6,506	\$3,500	\$5,226	392.0	\$0	\$15,170	\$49,968	622.0	
TPG	8	0	0	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$0	\$784	\$36,412	140.0	
Tucson FMS	106	0	14	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$23,924	1248.0	\$238,000	\$13,956	\$427,978	1879.0	
Tucson Rural ITS	13	4	0	\$5,929	\$7,192	\$0	155.0	\$4,661	\$2,250	\$0	267.0	\$0	\$9,995	\$30,027	422.0	
Yuma Rural ITS	6	0	0	\$3,558	\$4,176	\$0	90.0	\$2,214	\$1,500	\$0	150.0	\$0	\$6,210	\$17,656	240.0	
Totals:	2006	97	23	\$758,909	\$647,936	\$203,642	11987.5	\$464,374	\$371,407	\$462,890	1810.5	\$391,000	\$273,260	\$3,573,418	30798.0	

Year: 2008	ADOT Unit	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By ADOT Unit			
					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours		
ATRC	23	0	19	\$14,579	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$190,000	\$2,254	\$268,885	370.0
Flagstaff Rural ITS	34	4	0	\$15,857	\$15,731	\$647	\$14,411	367.0	\$14,411	\$4,355	\$40,905	613.5	\$0	\$20,668	\$112,574	980.5
Globe Rural ITS	16	2	0	\$6,934	\$7,798	\$1,294	\$5,288	166.0	\$5,288	\$2,210	\$16,002	267.0	\$0	\$9,346	\$48,872	433.0
Holbrook Rural ITS	33	0	0	\$12,623	\$14,713	\$1,941	\$11,015	314.0	\$11,015	\$3,815	\$42,294	524.0	\$0	\$17,279	\$103,680	838.0
Kingman Rural ITS	16	0	0	\$7,708	\$9,280	\$0	200.0	\$5,768	\$3,000	\$10,452	342.0	\$0	\$13,100	\$49,308	542.0	
Phoenix FMS	1822	91	73	\$665,267	\$550,596	\$173,617	10080.5	\$381,967	\$320,512	\$304,190	15595.0	\$773,000	\$173,973	\$3,343,122	25675.5	
Prescott Rural ITS	9	1	0	\$4,050	\$4,491	\$724	102.0	\$2,707	\$1,408	\$6,542	149.0	\$0	\$5,583	\$25,505	251.0	
Safford Rural ITS	18	0	0	\$8,894	\$10,672	\$0	230.0	\$6,506	\$3,500	\$11,592	392.0	\$0	\$15,170	\$56,334	622.0	
TPG	8	0	8	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$0	70.0	\$80,000	\$784	\$110,474	140.0	
Tucson FMS	106	0	24	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$3,080	1248.0	\$360,000	\$13,956	\$529,134	1879.0	
Tucson Rural ITS	13	0	0	\$5,929	\$7,192	\$0	155.0	\$4,661	\$2,250	\$0	267.0	\$0	\$9,995	\$30,027	422.0	
Yuma Rural ITS	15	9	0	\$8,053	\$9,131	\$724	202.0	\$4,955	\$3,158	\$0	313.5	\$0	\$12,658	\$38,679	515.5	
Totals:	2113	107	124	\$800,478	\$684,923	\$212,704	12702.5	\$490,001	\$391,929	\$438,793	19966.0	\$1,403,000	\$294,766	\$4,716,594	32668.5	

Year: 2009	ADOT Unit	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By ADOT Unit			
					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours		
ATRC	23	0	0	\$14,579	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254	\$89,728	370.0
Flagstaff Rural ITS	41	7	3	\$19,553	\$20,035	\$724	466.0	\$16,654	\$5,908	\$35,508	764.5	\$60,000	\$26,923	\$185,305	1230.5	
Globe Rural ITS	16	0	0	\$6,934	\$7,798	\$1,294	\$5,288	166.0	\$5,288	\$2,210	\$16,002	267.0	\$0	\$9,346	\$48,872	433.0
Holbrook Rural ITS	39	6	3	\$16,181	\$18,889	\$1,941	404.0	\$13,229	\$5,315	\$35,595	674.0	\$60,000	\$23,489	\$174,639	1078.0	
Kingman Rural ITS	16	0	0	\$7,708	\$9,280	\$0	200.0	\$5,768	\$3,000	\$10,452	342.0	\$0	\$13,100	\$49,308	542.0	
Phoenix FMS	1930	108	33	\$704,229	\$583,175	\$183,112	10681.5	\$401,833	\$337,367	\$321,288	16424.0	\$537,000	\$184,245	\$3,252,249	27105.5	
Prescott Rural ITS	9	0	0	\$4,050	\$4,491	\$724	102.0	\$2,707	\$1,408	\$6,542	149.0	\$0	\$5,583	\$25,505	251.0	
Safford Rural ITS	18	0	2	\$8,894	\$10,672	\$0	230.0	\$6,506	\$3,500	\$16,366	392.0	\$40,000	\$15,170	\$91,108	622.0	
TPG	8	0	0	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$0	70.0	\$0	\$784	\$36,412	140.0	
Tucson FMS	106	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$31,892	1248.0	\$0	\$13,956	\$197,946	1879.0	
Tucson Rural ITS	13	0	0	\$5,929	\$7,192	\$0	155.0	\$4,661	\$2,250	\$10,452	267.0	\$0	\$9,995	\$40,479	422.0	
Yuma Rural ITS	15	0	0	\$8,053	\$9,131	\$724	202.0	\$4,955	\$3,158	\$162	313.5	\$0	\$12,658	\$38,841	515.5	
Totals:	2234	121	41	\$846,694	\$725,982	\$222,276	13492.5	\$514,324	\$411,837	\$494,776	21096.0	\$897,000	\$317,503	\$4,230,392	34588.5	

Year: 2010	ADOT Unit	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By ADOT Unit	
					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
ATRC	23	0	0	\$14,579	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254
Flagstaff Rural ITS	41	0	1	\$19,553	\$20,035	\$724	466.0	\$16,654	\$5,908	\$32,895	764.5	\$20,000	\$26,923	\$142,692
Globe Rural ITS	18	2	0	\$7,210	\$8,054	\$1,448	184.0	\$5,346	\$2,316	\$16,002	269.0	\$0	\$9,436	\$49,812
Holbrook Rural ITS	55	16	1	\$20,443	\$23,002	\$4,344	527.0	\$16,271	\$6,198	\$32,982	774.0	\$20,000	\$25,883	\$149,123
Kingman Rural ITS	25	9	0	\$10,868	\$12,843	\$724	282.0	\$8,407	\$3,908	\$12,162	462.0	\$0	\$16,953	\$65,865
Phoenix FMS	2202	272	195	\$802,501	\$664,466	\$208,569	12175.5	\$453,029	\$380,822	\$308,361	18515.0	\$4,283,000	\$207,485	\$7,308,233
Prescott Rural ITS	9	0	0	\$4,050	\$4,491	\$724	102.0	\$2,707	\$1,408	\$6,542	149.0	\$0	\$5,583	\$25,505
Safford Rural ITS	28	10	0	\$10,374	\$12,992	\$0	280.0	\$9,856	\$3,500	\$6,366	497.0	\$0	\$16,870	\$59,958
TPG	8	0	0	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$0	\$784	\$36,412
Tucson FMS	106	0	58	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$31,080	1248.0	\$522,000	\$13,956	\$719,134
Tucson Rural ITS	13	0	0	\$5,929	\$7,192	\$0	155.0	\$4,661	\$2,250	\$10,452	267.0	\$0	\$9,995	\$40,479
Yuma Rural ITS	15	0	0	\$8,053	\$9,131	\$724	202.0	\$4,955	\$3,158	\$2,789	313.5	\$0	\$12,658	\$41,468
Totals:	2543	309	255	\$954,144	\$817,525	\$251,014	15259.5	\$574,609	\$457,189	\$480,148	23514.0	\$4,845,000	\$348,780	\$8,728,409
														38773.5

Year: 2011	ADOT Unit	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By ADOT Unit	
					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
ATRC	23	0	0	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254	
Flagstaff Rural ITS	41	0	0	\$19,553	\$20,035	\$724	466.0	\$16,654	\$5,908	\$40,748	764.5	\$0	\$26,923	
Globe Rural ITS	18	0	0	\$7,210	\$8,054	\$1,448	184.0	\$5,346	\$2,316	\$16,002	269.0	\$0	\$9,436	
Holbrook Rural ITS	55	0	0	\$20,443	\$23,002	\$4,344	527.0	\$16,271	\$6,198	\$43,017	774.0	\$0	\$25,883	
Kingman Rural ITS	25	0	0	\$10,868	\$12,843	\$724	282.0	\$8,407	\$3,908	\$14,034	462.0	\$0	\$16,953	
Phoenix FMS	2464	262	66	\$897,163	\$743,077	\$233,516	13624.5	\$493,995	\$415,877	\$374,322	20226.0	\$750,000	\$230,275	\$4,138,225
Prescott Rural ITS	9	0	2	\$4,050	\$4,491	\$724	102.0	\$2,707	\$1,408	\$5,402	149.0	\$218,000	\$5,583	\$242,365
Safford Rural ITS	28	0	0	\$10,374	\$12,992	\$0	280.0	\$9,856	\$3,500	\$11,592	497.0	\$0	\$16,870	\$65,184
TPG	8	0	0	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$0	\$784	\$36,412
Tucson FMS	106	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$31,080	1248.0	\$0	\$9,995	\$40,479
Tucson Rural ITS	13	0	0	\$7,855	\$9,744	\$0	210.0	\$7,074	\$2,750	\$12,162	369.5	\$0	\$12,915	\$52,500
Yuma Rural ITS	15	0	0	\$8,053	\$9,131	\$724	202.0	\$4,955	\$3,158	\$2,789	313.5	\$0	\$12,658	\$41,468
Totals:	2812	269	68	1,050,732	\$898,688	\$275,961	16763.5	\$617,988	\$492,744	\$572,477	25327.5	\$968,000	\$374,490	\$5,251,080
														42091.0

Year: 2012 ADOT Unit	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By ADOT Unit	
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
ATRC	23	0	23	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$0	185.0	\$41,000	\$2,254
Flagstaff Rural ITS	41	0	0	\$19,553	\$20,035	\$724	466.0	\$16,654	\$5,908	\$43,931	764.5	\$0	\$26,923
Globe Rural ITS	18	0	0	\$7,210	\$8,054	\$1,448	184.0	\$5,346	\$2,316	\$16,030	269.0	\$0	\$9,436
Holbrook Rural ITS	55	0	5	\$20,443	\$23,002	\$4,344	527.0	\$16,271	\$6,198	\$49,467	774.0	\$100,000	\$25,883
Kingman Rural ITS	25	0	0	\$10,868	\$12,843	\$724	282.0	\$8,407	\$3,908	\$24,500	462.0	\$0	\$16,953
Phoenix FMS	2464	0	220	\$897,163	\$743,077	\$233,516	13624.5	\$493,995	\$415,877	\$374,505	20226.0	\$2,576,000	\$230,275
Prescott Rural ITS	9	0	0	\$4,050	\$4,491	\$724	102.0	\$2,707	\$1,408	\$5,402	149.0	\$0	\$5,583
Safford Rural ITS	28	0	0	\$10,374	\$12,992	\$0	280.0	\$9,856	\$3,500	\$38,862	497.0	\$0	\$16,870
TPG	8	0	8	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$0	70.0	\$80,000	\$784
Tucson FMS	106	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$31,892	1248.0	\$0	\$13,956
Tucson Rural ITS	20	0	0	\$7,955	\$9,744	\$0	210.0	\$7,074	\$2,750	\$12,162	369.5	\$0	\$12,915
Yuma Rural ITS	15	0	0	\$8,053	\$9,131	\$724	202.0	\$4,955	\$3,158	\$2,789	313.5	\$0	\$12,658
Totals:	2812	0	256	1,050,732	\$898,688	\$275,961	1,6763.5	\$617,988	\$492,744	\$599,540	25327.5	\$3,166,000	\$374,490
												\$7,476,143	42091.0

APPENDIX D

Statewide ITI O&M Resource Forecast by ADOT Organization

ATRC

Year: 1998

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Operating Costs			Totals By Equip. Type	
	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
AVC - Piezo	9	0	0	\$1,503	\$1,503	45.0	\$1,503	45.0	\$0	\$882	\$9,900	90.0		
WIM - Bending Plate	4	0	0	\$3,736	\$3,736	40.0	\$3,736	40.0	\$0	\$392	\$22,808	80.0		
WIM - Piezo	10	0	0	\$9,340	\$9,340	100.0	\$9,340	100.0	\$0	\$980	\$57,020	200.0		
Totals:	23	0	0	\$14,579	\$14,579	185.0	\$14,579	185.0	\$0	\$2,254	\$89,728	370.0		

Year: 1999

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Operating Costs			Totals By Equip. Type	
	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
AVC - Piezo	9	0	0	\$1,503	\$1,503	45.0	\$1,503	45.0	\$0	\$882	\$9,900	90.0		
WIM - Bending Plate	4	0	0	\$3,736	\$3,736	40.0	\$3,736	40.0	\$0	\$392	\$22,808	80.0		
WIM - Piezo	10	0	0	\$9,340	\$9,340	100.0	\$9,340	100.0	\$0	\$980	\$57,020	200.0		
Totals:	23	0	0	\$14,579	\$14,579	185.0	\$14,579	185.0	\$0	\$2,254	\$89,728	370.0		

Year: 2000

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Operating Costs			Totals By Equip. Type	
	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
AVC - Piezo	9	0	9	\$1,503	\$1,503	45.0	\$1,503	45.0	\$0	\$882	\$9,900	90.0		
WIM - Bending Plate	4	0	0	\$3,736	\$3,736	40.0	\$3,736	40.0	\$0	\$392	\$22,808	80.0		
WIM - Piezo	10	0	10	\$9,340	\$9,340	100.0	\$9,340	100.0	\$0	\$100,000	\$147,680	200.0		
Totals:	23	0	19	\$14,579	\$14,579	185.0	\$14,579	185.0	\$0	\$2,254	\$266,888	370.0		

Year: 2001

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Operating Costs			Totals By Equip. Type	
	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
AVC - Piezo	9	0	0	\$1,503	\$1,503	45.0	\$1,503	45.0	\$0	\$882	\$9,900	90.0		
WIM - Bending Plate	4	0	0	\$3,736	\$3,736	40.0	\$3,736	40.0	\$0	\$392	\$22,808	80.0		
WIM - Piezo	10	0	0	\$9,340	\$9,340	100.0	\$9,340	100.0	\$0	\$980	\$57,020	200.0		
Totals:	23	0	0	\$14,579	\$14,579	185.0	\$14,579	185.0	\$0	\$2,254	\$89,728	370.0		

ATRC

Year: 2002		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type			
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
AVC - Piezo	9	0	0	\$1,503	\$1,503	\$1,503	45.0	\$1,503	\$1,503	\$1,503	45.0	\$0	\$882	\$9,900	90.0					
WIM - Bending Plate	4	0	0	\$3,736	\$3,736	\$3,736	40.0	\$3,736	\$3,736	\$3,736	40.0	\$0	\$392	\$22,808	80.0					
WIM - Piezo	10	0	0	\$9,340	\$9,340	\$9,340	100.0	\$9,340	\$9,340	\$9,340	100.0	\$0	\$980	\$57,020	200.0					
Totals:	23	0	0	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254	\$89,728	370.0					

Year: 2003		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type			
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
AVC - Piezo	9	0	0	\$1,503	\$1,503	\$1,503	45.0	\$1,503	\$1,503	\$1,503	45.0	\$0	\$882	\$9,900	90.0					
WIM - Bending Plate	4	0	0	\$3,736	\$3,736	\$3,736	40.0	\$3,736	\$3,736	\$3,736	40.0	\$0	\$392	\$22,808	80.0					
WIM - Piezo	10	0	0	\$9,340	\$9,340	\$9,340	100.0	\$9,340	\$9,340	\$9,340	100.0	\$0	\$980	\$57,020	200.0					
Totals:	23	0	0	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254	\$89,728	370.0					

Year: 2004		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type			
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
AVC - Piezo	9	0	9	\$1,503	\$1,503	\$1,503	45.0	\$1,503	\$1,503	\$1,503	45.0	\$0	\$90,000	\$882	\$9,397	90.0				
WIM - Bending Plate	4	0	0	\$3,736	\$3,736	\$3,736	40.0	\$3,736	\$3,736	\$3,736	40.0	\$0	\$392	\$22,808	80.0					
WIM - Piezo	10	0	10	\$9,340	\$9,340	\$9,340	100.0	\$9,340	\$9,340	\$9,340	100.0	\$0	\$100,000	\$980	\$147,680	200.0				
Totals:	23	0	19	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$190,000	\$2,254	\$268,885	370.0				

Year: 2005		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type			
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
AVC - Piezo	9	0	0	\$1,503	\$1,503	\$1,503	45.0	\$1,503	\$1,503	\$1,503	45.0	\$0	\$882	\$9,900	90.0					
WIM - Bending Plate	4	0	0	\$3,736	\$3,736	\$3,736	40.0	\$3,736	\$3,736	\$3,736	40.0	\$0	\$392	\$22,808	80.0					
WIM - Piezo	10	0	0	\$9,340	\$9,340	\$9,340	100.0	\$9,340	\$9,340	\$9,340	100.0	\$0	\$980	\$57,020	200.0					
Totals:	23	0	0	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254	\$89,728	370.0					

ATRC

Year: 2006

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type			
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
AVC - Piezo	9	0	0	\$1,503	\$1,503	\$1,503	45.0	\$1,503	\$1,503	\$1,503	45.0	\$0	\$882	\$9,900	90.0				
WIM - Bending Plate	4	0	0	\$3,736	\$3,736	\$3,736	40.0	\$3,736	\$3,736	\$3,736	40.0	\$0	\$392	\$22,808	80.0				
WIM - Piezo	10	0	0	\$9,340	\$9,340	\$9,340	100.0	\$9,340	\$9,340	\$9,340	100.0	\$0	\$980	\$57,020	200.0				
Totals:	23	0	0	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254	\$89,728	370.0				

Year: 2007

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type			
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
AVC - Piezo	9	0	0	\$1,503	\$1,503	\$1,503	45.0	\$1,503	\$1,503	\$1,503	45.0	\$0	\$882	\$9,900	90.0				
WIM - Bending Plate	4	0	0	\$3,736	\$3,736	\$3,736	40.0	\$3,736	\$3,736	\$3,736	40.0	\$0	\$392	\$22,808	80.0				
WIM - Piezo	10	0	0	\$9,340	\$9,340	\$9,340	100.0	\$9,340	\$9,340	\$9,340	100.0	\$0	\$980	\$57,020	200.0				
Totals:	23	0	0	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254	\$89,728	370.0				

Year: 2008

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type			
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
AVC - Piezo	9	0	9	\$1,503	\$1,503	\$1,503	45.0	\$1,503	\$1,503	\$1,503	45.0	\$0	\$90,000	\$882	\$9,397	90.0			
WIM - Bending Plate	4	0	0	\$3,736	\$3,736	\$3,736	40.0	\$3,736	\$3,736	\$3,736	40.0	\$0	\$392	\$22,808	80.0				
WIM - Piezo	10	0	10	\$9,340	\$9,340	\$9,340	100.0	\$9,340	\$9,340	\$9,340	100.0	\$0	\$100,000	\$980	\$47,680	200.0			
Totals:	23	0	19	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$190,000	\$2,254	\$268,885	370.0			

Year: 2009

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type			
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
AVC - Piezo	9	0	0	\$1,503	\$1,503	\$1,503	45.0	\$1,503	\$1,503	\$1,503	45.0	\$0	\$882	\$9,900	90.0				
WIM - Bending Plate	4	0	0	\$3,736	\$3,736	\$3,736	40.0	\$3,736	\$3,736	\$3,736	40.0	\$0	\$392	\$22,808	80.0				
WIM - Piezo	10	0	0	\$9,340	\$9,340	\$9,340	100.0	\$9,340	\$9,340	\$9,340	100.0	\$0	\$980	\$57,020	200.0				
Totals:	23	0	0	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254	\$89,728	370.0				

ATRC

Year: 2010

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
AVC - Piezo	9	0	0	\$1,503	\$1,503	\$1,503	45.0	\$1,503	\$1,503	\$1,503	45.0	\$0	\$882	\$9,900	90.0
WIM - Bending Plate	4	0	0	\$3,736	\$3,736	\$3,736	40.0	\$3,736	\$3,736	\$3,736	40.0	\$0	\$392	\$22,808	80.0
WIM - Piezo	10	0	0	\$9,340	\$9,340	\$9,340	100.0	\$9,340	\$9,340	\$9,340	100.0	\$0	\$980	\$57,020	200.0
Totals:	23	0	0	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254	\$89,728	370.0

Year: 2011

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
AVC - Piezo	9	0	0	\$1,503	\$1,503	\$1,503	45.0	\$1,503	\$1,503	\$1,503	45.0	\$0	\$882	\$9,900	90.0
WIM - Bending Plate	4	0	0	\$3,736	\$3,736	\$3,736	40.0	\$3,736	\$3,736	\$3,736	40.0	\$0	\$392	\$22,808	80.0
WIM - Piezo	10	0	0	\$9,340	\$9,340	\$9,340	100.0	\$9,340	\$9,340	\$9,340	100.0	\$0	\$980	\$57,020	200.0
Totals:	23	0	0	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254	\$89,728	370.0

Year: 2012

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
AVC - Piezo	9	0	9	\$1,503	\$1,503	\$1,503	45.0	\$1,503	\$1,503	\$1,503	45.0	\$0	\$882	\$9,900	90.0
WIM - Bending Plate	4	0	4	\$3,736	\$3,736	\$3,736	40.0	\$3,736	\$3,736	\$3,736	40.0	\$0	\$392	\$239,072	80.0
WIM - Piezo	10	0	10	\$9,340	\$9,340	\$9,340	100.0	\$9,340	\$9,340	\$9,340	100.0	\$0	\$980	\$147,680	200.0
Totals:	23	0	23	\$14,579	\$14,579	\$14,579	185.0	\$14,579	\$14,579	\$14,579	185.0	\$0	\$2,254	\$486,149	370.0

Flagstaff Rural ITS

Year: 1998

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
RWIS-CPU	1	0	0	\$2,905	\$0	\$0	29.0	\$2,950	\$0	\$0	29.0	\$0	\$500	\$6,355	\$0	\$58.0	\$6,355	
RWIS-RPU	10	3	0	\$1,480	\$2,320	\$0	50.0	\$3,350	\$0	\$18,291	105.0	\$0	\$1,700	\$27,141	\$0	\$155.0	\$27,141	
VMS	3	3	0	\$1,779	\$2,088	\$0	45.0	\$1,107	\$750	\$0	75.0	\$0	\$3,105	\$8,829	\$0	\$120.0	\$8,829	
Totals:	14	6	0	\$6,164	\$4,408	\$0	124.0	\$7,407	\$750	\$18,291	209.0	\$0	\$5,305	\$42,325	\$0	\$333.0	\$42,325	

Year: 1999

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
RWIS-CPU	1	0	0	\$2,905	\$0	\$0	29.0	\$2,950	\$0	\$0	29.0	\$0	\$500	\$6,355	\$0	\$58.0	\$6,355	
RWIS-RPU	11	1	0	\$1,628	\$2,552	\$0	55.0	\$3,685	\$0	\$18,291	115.5	\$0	\$1,870	\$28,026	\$0	\$170.5	\$28,026	
VMS	7	4	0	\$4,151	\$4,872	\$0	105.0	\$2,583	\$1,750	\$0	175.0	\$0	\$7,245	\$20,601	\$0	\$280.0	\$20,601	
Totals:	19	5	0	\$8,684	\$7,424	\$0	189.0	\$9,218	\$1,750	\$18,291	319.5	\$0	\$9,615	\$64,982	\$0	\$608.5	\$64,982	

Year: 2000

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
RWIS-CPU	1	0	0	\$2,905	\$0	\$0	29.0	\$2,950	\$0	\$0	29.0	\$0	\$500	\$6,355	\$0	\$58.0	\$6,355	
RWIS-RPU	11	0	0	\$1,628	\$2,552	\$0	55.0	\$3,685	\$0	\$26,130	115.5	\$0	\$1,870	\$35,865	\$0	\$170.5	\$35,865	
VMS	7	0	0	\$4,151	\$4,872	\$0	105.0	\$2,583	\$1,750	\$0	175.0	\$0	\$7,245	\$20,601	\$0	\$280.0	\$20,601	
Totals:	19	0	0	\$8,684	\$7,424	\$0	189.0	\$9,218	\$1,750	\$26,130	319.5	\$0	\$9,615	\$62,821	\$0	\$608.5	\$62,821	

Year: 2001

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
RWIS-CPU	1	0	0	\$2,905	\$0	\$0	29.0	\$2,950	\$0	\$0	29.0	\$0	\$500	\$6,355	\$0	\$58.0	\$6,355	
RWIS-RPU	11	0	0	\$1,628	\$2,552	\$0	55.0	\$3,685	\$0	\$28,743	115.5	\$0	\$1,870	\$38,478	\$0	\$170.5	\$38,478	
VMS	7	0	0	\$4,151	\$4,872	\$0	105.0	\$2,583	\$1,750	\$0	175.0	\$0	\$7,245	\$20,601	\$0	\$280.0	\$20,601	
Totals:	19	0	0	\$8,684	\$7,424	\$0	189.0	\$9,218	\$1,750	\$28,743	319.5	\$0	\$9,615	\$65,434	\$0	\$608.5	\$65,434	

Flagstaff Rural ITS

Year: 2002

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type	
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	Costs
RWIS-CPU	1	0	0	\$2,905	\$0	\$0	29.0	\$2,950	\$0	\$0	29.0	\$0	\$500
RWIS-RPU	15	4	0	\$2,220	\$3,480	\$0	75.0	\$5,025	\$0	\$28,743	157.5	\$0	\$2,550
VMS	8	1	0	\$4,744	\$5,568	\$0	120.0	\$2,952	\$2,000	\$0	200.0	\$0	\$8,280
Totals:	24	5	0	\$9,869	\$9,048	\$0	224.0	\$10,927	\$2,000	\$28,743	386.5	\$0	\$11,330
													\$71,917
													\$10.5

Year: 2003

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type	
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	Costs
RWIS-CPU	1	0	1	\$2,905	\$0	\$0	29.0	\$2,950	\$0	\$0	29.0	\$0	\$5,000
RWIS-RPU	15	0	7	\$2,220	\$3,480	\$0	75.0	\$5,025	\$0	\$10,452	157.5	\$140,000	\$2,550
VMS	8	0	0	\$4,744	\$5,568	\$0	120.0	\$2,952	\$2,000	\$0	200.0	\$0	\$8,280
Totals:	24	0	8	\$9,869	\$9,048	\$0	224.0	\$10,927	\$2,000	\$10,452	386.5	\$145,000	\$11,330
													\$198,626
													610.5

Year: 2004

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type	
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	Costs
RWIS-CPU	1	0	0	\$2,905	\$0	\$0	29.0	\$2,950	\$0	\$0	29.0	\$0	\$500
RWIS-RPU	15	0	0	\$2,220	\$3,480	\$0	75.0	\$5,025	\$0	\$20,904	157.5	\$0	\$2,550
VMS	14	6	0	\$8,302	\$9,744	\$0	210.0	\$5,166	\$3,500	\$0	350.0	\$0	\$14,490
Totals:	30	6	0	\$13,427	\$13,224	\$0	314.0	\$13,141	\$3,500	\$20,904	536.5	\$0	\$17,540
													\$31,736
													850.5

Year: 2005

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type	
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	Costs
RWIS-CPU	1	0	0	\$2,905	\$0	\$0	29.0	\$2,950	\$0	\$0	29.0	\$0	\$500
RWIS-RPU	15	0	0	\$2,220	\$3,480	\$0	75.0	\$5,025	\$0	\$39,195	157.5	\$0	\$2,550
VMS	14	0	0	\$8,302	\$9,744	\$0	210.0	\$5,166	\$3,500	\$0	350.0	\$0	\$14,490
Totals:	30	0	0	\$13,427	\$13,224	\$0	314.0	\$13,141	\$3,500	\$39,195	536.5	\$0	\$17,540
													\$100,027
													850.5

Flagstaff Rural ITS

Year: 2006				Preventive Maintenance Costs				Demand Maintenance Costs				Replace Operating Costs				Totals By Equip. Type	
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
RWIS-CPU	1	0	0	\$2,905	\$0	\$0	29.0	\$2,950	\$0	\$0	29.0	\$0	\$500	\$6,355	58.0		
RWIS-RPU	15	0	0	\$2,220	\$3,480	\$0	75.0	\$5,025	\$0	\$39,195	157.5	\$0	\$2,550	\$52,470	232.5		
VMS	14	0	0	\$8,302	\$9,744	\$0	210.0	\$5,166	\$3,500	\$0	350.0	\$0	\$14,490	\$41,202	560.0		
Totals:	30	0	0	\$13,427	\$13,224	\$0	314.0	\$13,141	\$3,500	\$39,195	536.5	\$0	\$17,540	\$100,027	850.5		

Year: 2007				Preventive Maintenance Costs				Demand Maintenance Costs				Replace Operating Costs				Totals By Equip. Type	
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
RWIS-CPU	1	0	0	\$2,905	\$0	\$0	29.0	\$2,950	\$0	\$0	29.0	\$0	\$500	\$6,355	58.0		
RWIS-RPU	15	0	0	\$2,220	\$3,480	\$0	75.0	\$5,025	\$0	\$39,195	157.5	\$0	\$2,550	\$52,470	232.5		
VMS	14	0	0	\$8,302	\$9,744	\$0	210.0	\$5,166	\$3,500	\$0	350.0	\$0	\$14,490	\$41,202	560.0		
Totals:	30	0	0	\$13,427	\$13,224	\$0	314.0	\$13,141	\$3,500	\$39,195	536.5	\$0	\$17,540	\$100,027	850.5		

Year: 2008				Preventive Maintenance Costs				Demand Maintenance Costs				Replace Operating Costs				Totals By Equip. Type	
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
CCTV	1	1	0	\$651	\$419	\$647	8.0	\$163	\$105	\$0	2.0	\$0	\$23	\$2,008	10.0		
RWIS-CPU	1	0	0	\$2,905	\$0	\$0	29.0	\$2,950	\$0	\$0	29.0	\$0	\$500	\$6,355	58.0		
RWIS-RPU	15	0	0	\$2,220	\$3,480	\$0	75.0	\$5,025	\$0	\$39,195	157.5	\$0	\$2,550	\$52,470	232.5		
VMS	17	3	0	\$10,081	\$11,832	\$0	255.0	\$6,273	\$4,250	\$1,710	425.0	\$0	\$17,595	\$51,741	680.0		
Totals:	34	4	0	\$15,857	\$15,731	\$647	367.0	\$14,411	\$4,355	\$40,905	613.5	\$0	\$20,668	\$112,574	980.5		

Flagstaff Rural ITS

Year: 2009

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Equipment Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
CCTV	1	0	0	\$651	\$419	\$647	8.0	\$163	\$105	\$162	2.0	\$0	\$23	\$2,170	10.0
RWIS-CPU	1	0	0	\$2,905	\$0	\$0	29.0	\$2,950	\$0	\$0	29.0	\$0	\$500	\$6,355	58.0
RWIS-RPU	15	0	3	\$2,220	\$3,480	\$0	75.0	\$5,025	\$0	\$31,356	157.5	\$60,000	\$2,550	\$104,631	232.5
VDS	1	1	0	\$138	\$128	\$77	9.0	\$29	\$53	\$0	1.0	\$0	\$45	\$470	10.0
VMS	23	6	0	\$13,639	\$16,008	\$0	345.0	\$8,487	\$5,750	\$3,990	575.0	\$0	\$23,805	\$71,679	920.0
Totals:	41	7	3	\$19,553	\$20,035	\$724	466.0	\$16,654	\$5,908	\$35,508	764.5	\$60,000	\$26,923	\$185,305	1230.5

Year: 2010

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Equipment Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
CCTV	1	0	0	\$651	\$419	\$647	8.0	\$163	\$105	\$162	2.0	\$0	\$23	\$2,170	10.0
RWIS-CPU	1	0	0	\$2,905	\$0	\$0	29.0	\$2,950	\$0	\$0	29.0	\$0	\$500	\$6,355	58.0
RWIS-RPU	15	0	1	\$2,220	\$3,480	\$0	75.0	\$5,025	\$0	\$28,743	157.5	\$20,000	\$2,550	\$62,018	232.5
VDS	1	0	0	\$138	\$128	\$77	9.0	\$29	\$53	\$0	1.0	\$0	\$45	\$470	10.0
VMS	23	0	0	\$13,639	\$16,008	\$0	345.0	\$8,487	\$5,750	\$3,990	575.0	\$0	\$23,805	\$71,679	920.0
Totals:	41	0	1	\$19,553	\$20,035	\$724	466.0	\$16,654	\$5,908	\$32,895	764.5	\$20,000	\$26,923	\$142,692	1230.5

Year: 2011

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Equipment Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
CCTV	1	0	0	\$651	\$419	\$647	8.0	\$163	\$105	\$162	2.0	\$0	\$23	\$2,170	10.0
RWIS-CPU	1	0	0	\$2,905	\$0	\$0	29.0	\$2,950	\$0	\$0	29.0	\$0	\$500	\$6,355	58.0
RWIS-RPU	15	0	0	\$2,220	\$3,480	\$0	75.0	\$5,025	\$0	\$36,582	157.5	\$0	\$2,550	\$49,857	232.5
VDS	1	0	0	\$138	\$128	\$77	9.0	\$29	\$53	\$14	1.0	\$0	\$45	\$484	10.0
VMS	23	0	0	\$13,639	\$16,008	\$0	345.0	\$8,487	\$5,750	\$3,990	575.0	\$0	\$23,805	\$71,679	920.0
Totals:	41	0	0	\$19,553	\$20,035	\$724	466.0	\$16,654	\$5,908	\$40,748	764.5	\$0	\$26,923	\$130,545	1230.5

Flagstaff Rural ITS

	Year: 2012			Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type	
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
CCTV	1	0	0	\$651	\$419	\$647	8.0	\$163	\$105	\$162	2.0	\$0	\$23	\$2,170	10.0		
RWIS-CPU	1	0	0	\$2,905	\$0	\$0	29.0	\$2,950	\$0	\$0	29.0	\$0	\$500	\$6,355	58.0		
RWIS-RPU	15	0	0	\$2,220	\$3,480	\$0	75.0	\$5,025	\$0	\$39,195	157.5	\$0	\$2,550	\$52,470	232.5		
VDS	1	0	0	\$138	\$128	\$77	9.0	\$29	\$53	\$14	1.0	\$0	\$45	\$484	10.0		
VMS	23	0	0	\$13,639	\$16,008	\$0	345.0	\$8,487	\$5,750	\$4,560	575.0	\$0	\$23,805	\$72,249	920.0		
Totals:	41	0	0	\$19,553	\$20,035	\$724	486.0	\$16,654	\$5,908	\$43,931	764.5	\$0	\$26,923	\$133,728	1230.5		

Globe Rural ITS

Year: 2002		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
RWIS-RPU		6	6	0	\$888	\$1,392	\$0	30.0	\$2,010	\$0	\$0	63.0	\$0	\$1,020	\$0	\$5,310		93.0	
Totals:		6	6	0	\$888	\$1,392	\$0	30.0	\$2,010	\$0	\$0	63.0	\$0	\$1,020	\$0	\$5,310		93.0	

Year: 2003		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
RWIS-RPU		6	0	0	\$888	\$1,392	\$0	30.0	\$2,010	\$0	\$0	63.0	\$0	\$1,020	\$0	\$5,310		93.0	
Totals:		6	0	0	\$888	\$1,392	\$0	30.0	\$2,010	\$0	\$0	63.0	\$0	\$1,020	\$0	\$5,310		93.0	

Year: 2004		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
RWIS-RPU		6	0	0	\$888	\$1,392	\$0	30.0	\$2,010	\$0	\$0	63.0	\$0	\$1,020	\$0	\$20,988		93.0	
Totals:		6	0	0	\$888	\$1,392	\$0	30.0	\$2,010	\$0	\$0	63.0	\$0	\$1,020	\$0	\$20,988		93.0	

Year: 2005		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
RWIS-RPU		6	0	0	\$888	\$1,392	\$0	30.0	\$2,010	\$0	\$0	63.0	\$0	\$1,020	\$0	\$20,988		93.0	
Totals:		6	0	0	\$888	\$1,392	\$0	30.0	\$2,010	\$0	\$0	63.0	\$0	\$1,020	\$0	\$20,988		93.0	

Year: 2006		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
RWIS-RPU		6	0	0	\$888	\$1,392	\$0	30.0	\$2,010	\$0	\$0	63.0	\$0	\$1,020	\$0	\$20,988		93.0	
VMS		4	4	0	\$2,372	\$2,784	\$0	60.0	\$1,476	\$1,000	\$0	100.0	\$0	\$4,140	\$0	\$11,772		160.0	
Totals:		10	4	0	\$3,260	\$4,176	\$0	90.0	\$3,486	\$1,000	\$15,678	163.0	\$0	\$5,160	\$0	\$32,760		253.0	

Globe Rural ITS

Year: 2007			Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
CCTV	2	2	0	\$1,302	\$838	\$1,294	16.0	\$326	\$210	\$0	4.0	\$0	\$46	\$4,016	20.0		
RWIS-RPU	6	0	0	\$888	\$1,392	\$0	30.0	\$2,010	\$0	\$15,678	63.0	\$0	\$1,020	\$20,988	93.0		
VMS	6	2	0	\$3,558	\$4,176	\$0	90.0	\$2,214	\$1,500	\$0	150.0	\$0	\$6,210	\$17,658	240.0		
Totals:	14	4	0	\$5,748	\$6,406	\$1,294	136.0	\$4,550	\$1,710	\$15,678	217.0	\$0	\$7,276	\$42,662	363.0		

Year: 2008			Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
CCTV	2	0	0	\$1,302	\$838	\$1,294	16.0	\$326	\$210	\$0	4.0	\$0	\$46	\$4,340	20.0		
RWIS-RPU	6	0	0	\$888	\$1,392	\$0	30.0	\$2,010	\$0	\$15,678	63.0	\$0	\$1,020	\$20,988	93.0		
VMS	8	2	0	\$4,744	\$5,568	\$0	120.0	\$2,952	\$2,000	\$0	200.0	\$0	\$8,280	\$23,544	320.0		
Totals:	16	2	0	\$6,934	\$7,798	\$1,294	166.0	\$5,288	\$2,210	\$16,002	267.0	\$0	\$9,346	\$48,872	433.0		

Year: 2009			Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
CCTV	2	0	0	\$1,302	\$838	\$1,294	16.0	\$326	\$210	\$0	4.0	\$0	\$46	\$4,340	20.0		
RWIS-RPU	6	0	0	\$888	\$1,392	\$0	30.0	\$2,010	\$0	\$15,678	63.0	\$0	\$1,020	\$20,988	93.0		
VMS	8	0	0	\$4,744	\$5,568	\$0	120.0	\$2,952	\$2,000	\$0	200.0	\$0	\$8,280	\$23,544	320.0		
Totals:	16	0	0	\$6,934	\$7,798	\$1,294	166.0	\$5,288	\$2,210	\$16,002	267.0	\$0	\$9,346	\$48,872	433.0		

Globe Rural ITS

Year: 2010

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
CCTV	2	0	0	\$1,302	\$838	\$1,294	16.0	\$326	\$210	\$324	4.0	\$0	\$46	\$4,340	20.0			
RWIS-RPU	6	0	0	\$888	\$1,392	\$0	30.0	\$2,010	\$0	\$15,678	63.0	\$0	\$1,020	\$20,988	93.0			
VDS	2	2	0	\$276	\$256	\$154	18.0	\$58	\$106	\$0	2.0	\$0	\$90	\$940	20.0			
VMS	8	0	0	\$4,744	\$5,568	\$0	120.0	\$2,952	\$2,000	\$0	200.0	\$0	\$8,280	\$23,544	320.0			
Totals:	18	2	0	\$7,210	\$8,054	\$1,448	184.0	\$5,346	\$2,316	\$16,002	269.0	\$0	\$9,436	\$49,812	453.0			

Year: 2011

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
CCTV	2	0	0	\$1,302	\$838	\$1,294	16.0	\$326	\$210	\$324	4.0	\$0	\$46	\$4,340	20.0			
RWIS-RPU	6	0	0	\$888	\$1,392	\$0	30.0	\$2,010	\$0	\$15,678	63.0	\$0	\$1,020	\$20,988	93.0			
VDS	2	0	0	\$276	\$256	\$154	18.0	\$58	\$106	\$0	2.0	\$0	\$90	\$940	20.0			
VMS	8	0	0	\$4,744	\$5,568	\$0	120.0	\$2,952	\$2,000	\$0	200.0	\$0	\$8,280	\$23,544	320.0			
Totals:	18	0	0	\$7,210	\$8,054	\$1,448	184.0	\$5,346	\$2,316	\$16,002	269.0	\$0	\$9,436	\$49,812	453.0			

Year: 2012

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
CCTV	2	0	0	\$1,302	\$838	\$1,294	16.0	\$326	\$210	\$324	4.0	\$0	\$46	\$4,340	20.0			
RWIS-RPU	6	0	0	\$888	\$1,392	\$0	30.0	\$2,010	\$0	\$15,678	63.0	\$0	\$1,020	\$20,988	93.0			
VDS	2	0	0	\$276	\$256	\$154	18.0	\$58	\$106	\$0	2.0	\$0	\$90	\$940	20.0			
VMS	8	0	0	\$4,744	\$5,568	\$0	120.0	\$2,952	\$2,000	\$0	200.0	\$0	\$8,280	\$23,544	320.0			
Totals:	18	0	0	\$7,210	\$8,054	\$1,448	184.0	\$5,346	\$2,316	\$16,030	269.0	\$0	\$9,436	\$49,840	453.0			

Holbrook Rural ITS

Year: 1998

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
RWIS-RPU	3	3	0	\$444	\$696	\$0	15.0	\$1,005	\$0	\$0	\$0	31.5	\$0	\$510	\$2,655	46.5
Totals:	3	3	0	\$444	\$696	\$0	15.0	\$1,005	\$0	\$0	\$0	31.5	\$0	\$510	\$2,655	46.5

Year: 1999

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
RWIS-RPU	4	1	0	\$592	\$928	\$0	20.0	\$1,340	\$0	\$0	42.0	\$0	\$680	\$3,540	62.0	
VMS	2	2	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$5,886	80.0	
Totals:	6	3	0	\$1,778	\$2,320	\$0	50.0	\$2,078	\$500	\$0	92.0	\$0	\$2,750	\$9,426	142.0	

Year: 2000

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
RWIS-RPU	4	0	0	\$592	\$928	\$0	20.0	\$1,340	\$0	\$7,839	42.0	\$0	\$680	\$11,379	62.0	
VMS	2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$5,886	80.0	

56

Year: 2001

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
RWIS-RPU	9	5	0	\$1,332	\$2,088	\$0	45.0	\$3,015	\$0	\$10,452	94.5	\$0	\$1,530	\$8,417	139.5	
VMS	5	3	0	\$2,965	\$3,480	\$0	75.0	\$1,845	\$1,250	\$0	125.0	\$0	\$5,175	\$14,715	200.0	

Totals:

Holbrook Rural ITS

Year: 2002

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours	
RWIS-RPU	9	0	0	\$1,332	\$2,088	\$0	45.0	\$3,015	\$0	\$10,452	94.5	\$0	\$1,530	\$18,417	139.5			
VMS	7	2	0	\$4,151	\$4,872	\$0	105.0	\$2,583	\$1,750	\$0	175.0	\$0	\$7,245	\$20,601	280.0			
Totals:	16	2	0	\$5,483	\$6,960	\$0	150.0	\$5,598	\$1,750	\$10,452	269.5	\$0	\$8,775	\$39,018	419.5			

Year: 2003

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours	
RWIS-RPU	9	0	0	\$1,332	\$2,088	\$0	45.0	\$3,015	\$0	\$23,517	94.5	\$0	\$1,530	\$31,482	139.5			
VMS	9	2	0	\$5,337	\$6,264	\$0	135.0	\$3,321	\$2,250	\$0	225.0	\$0	\$9,315	\$26,487	360.0			
Totals:	18	2	0	\$6,669	\$8,352	\$0	180.0	\$6,336	\$2,250	\$23,517	319.5	\$0	\$10,845	\$57,869	499.5			

Year: 2004

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours	
RWIS-RPU	16	7	0	\$2,368	\$3,712	\$0	80.0	\$5,360	\$0	\$23,517	168.0	\$0	\$2,720	\$37,677	248.0			
VMS	11	2	0	\$6,523	\$7,656	\$0	165.0	\$4,059	\$2,750	\$0	275.0	\$0	\$11,385	\$32,373	440.0			
Totals:	27	9	0	\$8,891	\$11,368	\$0	245.0	\$9,419	\$2,750	\$23,517	443.0	\$0	\$14,105	\$70,050	688.0			

Year: 2005

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours	
RWIS-RPU	16	0	0	\$2,368	\$3,712	\$0	80.0	\$5,360	\$0	\$23,517	168.0	\$0	\$2,720	\$37,677	248.0			
VMS	11	0	0	\$6,523	\$7,656	\$0	165.0	\$4,059	\$2,750	\$0	275.0	\$0	\$11,385	\$32,373	440.0			
Totals:	27	0	0	\$8,891	\$11,368	\$0	245.0	\$9,419	\$2,750	\$23,517	443.0	\$0	\$14,105	\$70,050	688.0			

Holbrook Rural ITS

Year: 2006				Preventive Maintenance Costs				Demand Maintenance Costs				Replace Operating Costs				Totals By Equip. Type	
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
RWIS-RPU	16	0	0	\$2,368	\$3,712	\$0	80.0	\$5,360	\$0	\$41,808	168.0	\$0	\$2,720	\$55,968	248.0		
VMS	11	0	0	\$6,523	\$7,656	\$0	165.0	\$4,059	\$2,750	\$0	275.0	\$0	\$11,385	\$32,373	440.0		
Totals:	27	0	0	\$8,891	\$11,368	\$0	245.0	\$9,419	\$2,750	\$41,808	443.0	\$0	\$14,105	\$38,341	688.0		

Year: 2007				Preventive Maintenance Costs				Demand Maintenance Costs				Replace Operating Costs				Totals By Equip. Type	
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
CCTV	3	3	0	\$1,953	\$1,257	\$1,941	24.0	\$489	\$315	\$0	6.0	\$0	\$69	\$6,024	30.0		
RWIS-RPU	16	0	0	\$2,368	\$3,712	\$0	80.0	\$5,360	\$0	\$41,808	168.0	\$0	\$2,720	\$55,968	248.0		
VMS	14	3	0	\$8,302	\$9,744	\$0	210.0	\$5,166	\$3,500	\$0	350.0	\$0	\$14,490	\$41,202	560.0		
Totals:	33	6	0	\$12,623	\$14,713	\$1,941	314.0	\$11,015	\$3,815	\$41,808	524.0	\$0	\$17,279	\$103,184	838.0		

Year: 2008				Preventive Maintenance Costs				Demand Maintenance Costs				Replace Operating Costs				Totals By Equip. Type	
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
CCTV	3	0	0	\$1,953	\$1,257	\$1,941	24.0	\$489	\$315	\$486	6.0	\$0	\$69	\$6,510	30.0		
RWIS-RPU	16	0	0	\$2,368	\$3,712	\$0	80.0	\$5,360	\$0	\$41,808	168.0	\$0	\$2,720	\$55,968	248.0		
VMS	14	0	0	\$8,302	\$9,744	\$0	210.0	\$5,166	\$3,500	\$0	350.0	\$0	\$14,490	\$41,202	560.0		
Totals:	33	0	0	\$12,623	\$14,713	\$1,941	314.0	\$11,015	\$3,815	\$42,294	524.0	\$0	\$17,279	\$103,680	838.0		

Year: 2009				Preventive Maintenance Costs				Demand Maintenance Costs				Replace Operating Costs				Totals By Equip. Type	
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
CCTV	3	0	0	\$1,953	\$1,257	\$1,941	24.0	\$489	\$315	\$486	6.0	\$0	\$69	\$6,510	30.0		
RWIS-RPU	16	0	3	\$2,368	\$3,712	\$0	80.0	\$5,360	\$0	\$33,969	168.0	\$60,000	\$2,720	\$108,129	248.0		
VMS	20	6	0	\$11,860	\$13,920	\$0	300.0	\$7,380	\$5,000	\$1,140	500.0	\$0	\$20,700	\$60,000	800.0		
Totals:	39	6	3	\$16,181	\$18,889	\$1,941	404.0	\$13,229	\$5,315	\$35,595	674.0	\$60,000	\$23,489	\$174,639	1078.0		

Holbrook Rural ITS

Year: 2010									
Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs		
				Labor	Equipment	Materials	ManHours	Labor	Equipment
CCTV	6	3	0	\$3,906	\$2,514	\$3,882	48.0	\$978	\$630
RWIS-RPU	22	6	1	\$3,256	\$5,104	\$0	110.0	\$7,370	\$0
VDS	6	6	0	\$828	\$768	\$462	54.0	\$174	\$318
VMS	21	1	0	\$12,453	\$14,616	\$0	315.0	\$7,749	\$5,250
Totals:	55	16	1	\$20,443	\$23,002	\$4,344	527.0	\$16,271	\$6,198

Year: 2011									
Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs		
				Labor	Equipment	Materials	ManHours	Labor	Equipment
CCTV	6	0	0	\$3,906	\$2,514	\$3,882	48.0	\$978	\$630
RWIS-RPU	22	0	0	\$3,256	\$5,104	\$0	110.0	\$7,370	\$0
VDS	6	0	0	\$828	\$768	\$462	54.0	\$174	\$318
VMS	21	0	0	\$12,453	\$14,616	\$0	315.0	\$7,749	\$5,250
Totals:	55	0	0	\$20,443	\$23,002	\$4,344	527.0	\$16,271	\$6,198

Year: 2012									
Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs		
				Labor	Equipment	Materials	ManHours	Labor	Equipment
CCTV	6	0	0	\$3,906	\$2,514	\$3,882	48.0	\$978	\$630
RWIS-RPU	22	0	5	\$3,256	\$5,104	\$0	110.0	\$7,370	\$0
VDS	6	0	0	\$828	\$768	\$462	54.0	\$174	\$318
VMS	21	0	0	\$12,453	\$14,616	\$0	315.0	\$7,749	\$5,250
Totals:	55	0	5	\$20,443	\$23,002	\$4,344	527.0	\$16,271	\$6,198

Kingman Rural ITS

Year: 2000

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
VMS	3	3	0	\$1,779	\$2,088	\$0	45.0	\$1,107	\$750	\$0	75.0	\$0	\$3,105	\$8,829	120.0			
Totals:	3	3	0	\$1,779	\$2,088	\$0	45.0	\$1,107	\$750	\$0	75.0	\$0	\$3,105	\$8,829	120.0			

Year: 2001

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
VMS	6	3	0	\$3,558	\$4,176	\$0	90.0	\$2,214	\$1,500	\$0	150.0	\$0	\$6,210	\$17,658	240.0			
Totals:	6	3	0	\$3,558	\$4,176	\$0	90.0	\$2,214	\$1,500	\$0	150.0	\$0	\$6,210	\$17,658	240.0			

Year: 2002

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
RWIS-RPU	1	1	0	\$148	\$232	\$0	5.0	\$335	\$0	\$0	10.5	\$0	\$170	\$885	15.5			
VMS	6	0	0	\$3,558	\$4,176	\$0	90.0	\$2,214	\$1,500	\$0	150.0	\$0	\$6,210	\$17,658	240.0			
Totals:	7	1	0	\$3,706	\$4,408	\$0	95.0	\$2,549	\$1,500	\$0	160.5	\$0	\$6,380	\$18,643	265.5			

Year: 2003

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
RWIS-RPU	1	0	0	\$148	\$232	\$0	5.0	\$335	\$0	\$0	10.5	\$0	\$170	\$885	15.5			
VMS	7	1	0	\$4,151	\$4,872	\$0	105.0	\$2,583	\$1,750	\$0	175.0	\$0	\$7,245	\$20,601	280.0			
Totals:	8	1	0	\$4,299	\$5,104	\$0	110.0	\$2,918	\$1,750	\$0	185.5	\$0	\$7,415	\$21,486	295.5			

Kingman Rural ITS

Year: 2004

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
RWIS-RPU	1	0	0	\$148	\$232	\$0	5.0	\$335	\$0	\$2,613	10.5	\$0	\$170	\$0	\$3,498	15.5		
VMS	7	0	0	\$4,151	\$4,872	\$0	105.0	\$2,583	\$1,750	\$0	175.0	\$0	\$7,245	\$0	\$20,601	280.0		
Totals:	8	0	0	\$4,299	\$5,104	\$0	110.0	\$2,918	\$1,750	\$2,613	185.5	\$0	\$7,415	\$0	\$24,099	295.5		

Year: 2005

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
RWIS-RPU	4	3	0	\$592	\$928	\$0	20.0	\$1,340	\$0	\$2,613	42.0	\$0	\$680	\$0	\$6,153	62.0		
VMS	9	2	0	\$5,337	\$6,264	\$0	135.0	\$3,321	\$2,250	\$0	225.0	\$0	\$9,315	\$0	\$26,487	360.0		
Totals:	13	5	0	\$5,929	\$7,192	\$0	155.0	\$4,661	\$2,250	\$2,613	267.0	\$0	\$9,995	\$0	\$32,640	422.0		

Year: 2006

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
RWIS-RPU	4	0	0	\$592	\$928	\$0	20.0	\$1,340	\$0	\$2,613	42.0	\$0	\$680	\$0	\$6,153	62.0		
VMS	9	0	0	\$5,337	\$6,264	\$0	135.0	\$3,321	\$2,250	\$0	225.0	\$0	\$9,315	\$0	\$26,487	360.0		
Totals:	13	0	0	\$5,929	\$7,192	\$0	155.0	\$4,661	\$2,250	\$2,613	267.0	\$0	\$9,995	\$0	\$32,640	422.0		

Year: 2007

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
RWIS-RPU	4	0	0	\$592	\$928	\$0	20.0	\$1,340	\$0	\$10,452	42.0	\$0	\$680	\$0	\$13,992	62.0		
VMS	12	3	0	\$7,116	\$8,352	\$0	180.0	\$4,428	\$3,000	\$0	300.0	\$0	\$12,420	\$0	\$35,316	480.0		
Totals:	16	3	0	\$7,708	\$9,280	\$0	200.0	\$5,768	\$3,000	\$10,452	342.0	\$0	\$13,100	\$0	\$49,308	542.0		

Kingman Rural ITS

Year: 2008		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type		
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours			
RWIS-RPU	4	0	0	\$592	\$928	\$0	20.0	\$1,340	\$0	\$10,452	42.0	\$0	\$880	\$13,992	62.0
VMS	12	0	0	\$7,116	\$8,352	\$0	180.0	\$4,428	\$3,000	\$0	300.0	\$0	\$12,420	\$35,316	480.0
Totals:	16	0	0	\$7,708	\$9,280	\$0	200.0	\$5,768	\$3,000	\$10,452	342.0	\$0	\$13,100	\$49,308	\$42.0

Year: 2009		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type		
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours			
RWIS-RPU	4	0	0	\$592	\$928	\$0	20.0	\$1,340	\$0	\$10,452	42.0	\$0	\$880	\$13,992	62.0
VMS	12	0	0	\$7,116	\$8,352	\$0	180.0	\$4,428	\$3,000	\$0	300.0	\$0	\$12,420	\$35,316	480.0
Totals:	16	0	0	\$7,708	\$9,280	\$0	200.0	\$5,768	\$3,000	\$10,452	342.0	\$0	\$13,100	\$49,308	\$42.0

Year: 2010		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type		
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours			
CCTV	1	1	0	\$651	\$419	\$647	8.0	\$163	\$105	\$0	2.0	\$0	\$23	\$2,008	10.0
RWIS-RPU	8	4	0	\$1,184	\$1,856	\$0	40.0	\$2,680	\$0	\$10,452	84.0	\$0	\$1,360	\$17,532	124.0
VDS	1	1	0	\$138	\$128	\$77	9.0	\$29	\$53	\$0	1.0	\$0	\$45	\$470	10.0
VMS	15	3	0	\$8,895	\$10,440	\$0	225.0	\$5,535	\$3,750	\$1,710	375.0	\$0	\$15,525	\$45,855	600.0
Totals:	25	9	0	\$10,868	\$12,843	\$724	282.0	\$8,407	\$3,908	\$12,162	462.0	\$0	\$16,953	\$66,866	744.0

Year: 2011		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type		
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours			
CCTV	1	0	0	\$651	\$419	\$647	8.0	\$163	\$105	\$162	2.0	\$0	\$23	\$2,170	10.0
RWIS-RPU	8	0	0	\$1,184	\$1,856	\$0	40.0	\$2,680	\$0	\$10,452	84.0	\$0	\$1,360	\$17,532	124.0
VDS	1	0	0	\$138	\$128	\$77	9.0	\$29	\$53	\$0	1.0	\$0	\$45	\$470	10.0
VMS	15	0	0	\$8,895	\$10,440	\$0	225.0	\$5,535	\$3,750	\$3,420	375.0	\$0	\$15,525	\$47,565	600.0
Totals:	25	0	0	\$10,868	\$12,843	\$724	282.0	\$8,407	\$3,908	\$14,034	462.0	\$0	\$16,953	\$67,737	744.0

Kingman Rural ITS

Year: 2012

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs		Totals By Equip. Type	
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs
CCTV	1	0	0	\$651	\$419	\$647	8.0	\$163	\$105	\$162	2.0	\$0	\$23	\$2,170	10.0	
RWIS-RPU	8	0	0	\$1,184	\$1,856	\$0	40.0	\$2,680	\$0	\$20,904	84.0	\$0	\$1,360	\$27,984	124.0	
VDS	1	0	0	\$138	\$128	\$77	9.0	\$29	\$53	\$14	1.0	\$0	\$45	\$484	10.0	
VMS	15	0	0	\$8,895	\$10,440	\$0	225.0	\$5,535	\$3,750	\$3,420	375.0	\$0	\$15,525	\$47,565	600.0	
Totals:	25	0	0	\$10,868	\$12,843	\$724	282.0	\$8,407	\$3,908	\$24,500	462.0	\$0	\$16,953	\$78,203	744.0	

Phoenix FMS

Year: 1998

Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
CCTV	62	0	20	\$40,362	\$25,978	\$40,114	496.0	\$10,106	\$6,510	\$6,804	124.0	\$340,000	\$1,426	\$471,300
ILD Cabinet	158	0	0	\$57,038	\$42,344	\$38,058	711.0	\$4,582	\$8,374	\$2,212	158.0	\$0	\$6,004	\$128,612
Node Room	12	0	0	\$1,776	\$2,784	\$0	60.0	\$4,296	\$2,148	\$4,296	288.0	\$0	\$12,420	\$27,720
PAD Cabinet	19	0	0	\$6,859	\$5,092	\$969	85.5	\$551	\$1,007	\$266	19.0	\$0	\$855	\$15,599
Power Cabinet	74	0	0	\$10,952	\$17,168	\$0	370.0	\$6,660	\$3,330	\$6,660	444.0	\$0	\$0	\$44,770
Ramp Meter/ILD	79	0	0	\$28,519	\$21,172	\$4,029	355.5	\$80,817	\$66,360	\$76,077	302.0	\$0	\$3,555	\$280,529
Ramp Meter/PAD	11	0	0	\$7,953	\$5,896	\$1,133	49.5	\$11,253	\$9,240	\$10,593	418.0	\$0	\$495	\$46,563
VMS	31	0	0	\$18,383	\$21,576	\$0	465.0	\$11,439	\$7,750	\$0	775.0	\$0	\$32,085	\$91,233
Totals:	446	0	20	\$171,842	\$142,010	\$54,303	2592.5	\$129,704	\$104,719	\$106,908	5228.0	\$340,000	\$56,840	\$1,106,326
														7820.5

Year: 1999

Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
CCTV	71	9	0	\$46,221	\$29,749	\$45,937	568.0	\$11,573	\$7,455	\$10,044	142.0	\$0	\$1,633	\$152,612
ILD Cabinet	158	0	0	\$57,038	\$42,344	\$8,058	711.0	\$4,582	\$8,374	\$2,212	158.0	\$0	\$6,004	\$128,612
Node Room	12	0	0	\$1,776	\$2,784	\$0	60.0	\$4,296	\$2,148	\$4,296	288.0	\$0	\$12,420	\$27,720
PAD Cabinet	19	0	0	\$6,859	\$5,092	\$969	85.5	\$551	\$1,007	\$266	19.0	\$0	\$855	\$15,599
Power Cabinet	92	18	0	\$13,616	\$21,344	\$0	460.0	\$8,280	\$4,140	\$8,280	552.0	\$0	\$0	\$55,660
Ramp Meter/ILD	89	10	0	\$32,129	\$23,852	\$4,539	400.5	\$91,047	\$74,760	\$76,077	382.0	\$0	\$4,005	\$306,409
Ramp Meter/PAD	11	0	0	\$7,953	\$5,896	\$1,133	49.5	\$11,253	\$9,240	\$10,593	418.0	\$0	\$495	\$46,563
TMS	54	54	0	\$19,494	\$14,472	\$2,754	243.0	\$1,566	\$2,862	\$0	54.0	\$0	\$2,052	\$43,200
VMS	37	6	0	\$21,941	\$25,752	\$0	555.0	\$13,653	\$9,250	\$0	925.0	\$0	\$38,295	\$108,891
Totals:	543	97	0	\$207,027	\$171,285	\$63,390	3132.5	\$146,801	\$119,236	\$111,768	5938.0	\$0	\$65,759	\$385,286
														9070.5

Phoenix FMS

Year: 2000

Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Replace Costs	Operating Costs	Totals By Equip. Type
CCTV	78	7	0	\$50,778	\$32,682	\$50,466	624.0	\$12,714	\$8,190	\$11,502	156.0	\$0	\$1,794	\$168,126	780.0
ILD Cabinet	158	0	0	\$57,038	\$42,344	\$38,058	711.0	\$4,582	\$8,374	\$2,212	158.0	\$0	\$6,004	\$128,612	869.0
Node Room	12	0	0	\$1,776	\$2,784	\$0	60.0	\$4,296	\$2,148	\$4,296	288.0	\$0	\$12,420	\$27,720	348.0
PAD Cabinet	19	0	0	\$6,859	\$5,092	\$969	85.5	\$551	\$1,007	\$266	19.0	\$0	\$855	\$15,599	104.5
Power Cabinet	108	16	0	\$15,984	\$25,056	\$0	540.0	\$9,720	\$4,860	\$9,720	648.0	\$0	\$0	\$65,340	1188.0
Ramp Meter/ILD	101	12	0	\$36,461	\$27,068	\$5,151	454.5	\$103,323	\$84,840	\$85,707	3838.0	\$0	\$4,545	\$347,095	4292.5
Ramp Meter/PAD	11	0	0	\$7,953	\$5,896	\$1,133	49.5	\$11,253	\$9,240	\$10,593	418.0	\$0	\$495	\$46,563	467.5
TMS	96	42	0	\$34,656	\$25,728	\$4,896	432.0	\$2,784	\$5,088	\$756	96.0	\$0	\$3,648	\$77,556	528.0
VMS	41	4	0	\$24,313	\$28,536	\$0	615.0	\$15,129	\$10,250	\$0	1025.0	\$0	\$42,435	\$120,663	1640.0
Totals:	624	81	0	\$235,818	\$195,186	\$70,673	3571.5	\$164,352	\$133,997	\$125,052	6646.0	\$0	\$72,196	\$997,274	10217.5

Year: 2001

Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Replace Costs	Operating Costs	Totals By Equip. Type
CCTV	99	21	0	\$64,449	\$41,481	\$64,053	792.0	\$16,137	\$10,395	\$12,636	198.0	\$0	\$2,277	\$211,428	990.0
ILD Cabinet	158	0	0	\$57,038	\$42,344	\$8,058	711.0	\$4,582	\$8,374	\$2,212	158.0	\$0	\$6,004	\$128,612	869.0
Node Room	12	0	0	\$1,776	\$2,784	\$0	60.0	\$4,296	\$2,148	\$4,296	288.0	\$0	\$12,420	\$27,720	348.0
PAD Cabinet	19	0	0	\$6,859	\$5,092	\$969	85.5	\$551	\$1,007	\$266	19.0	\$0	\$855	\$15,599	104.5
Power Cabinet	143	35	0	\$21,164	\$33,176	\$0	715.0	\$12,870	\$6,435	\$12,870	858.0	\$0	\$0	\$86,515	1573.0
Ramp Meter/ILD	118	17	12	\$42,598	\$31,624	\$6,018	531.0	\$120,714	\$99,120	\$85,707	4484.0	\$180,000	\$5,310	\$571,091	5015.0
Ramp Meter/PAD	11	0	0	\$7,953	\$5,896	\$1,133	49.5	\$11,253	\$9,240	\$10,593	418.0	\$0	\$495	\$46,563	467.5
TMS	246	150	0	\$88,806	\$65,928	\$12,546	1107.0	\$7,134	\$13,038	\$1,344	246.0	\$0	\$3,648	\$198,144	1353.0
VMS	56	15	0	\$33,208	\$38,976	\$0	840.0	\$20,664	\$14,000	\$0	1400.0	\$0	\$57,960	\$164,808	2240.0
Totals:	862	238	12	\$323,851	\$267,301	\$92,777	4891.0	\$198,201	\$163,757	\$129,924	8069.0	\$180,000	\$94,669	\$1,440,480	12960.0

Phoenix FMS

Year: 2002

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Demand Maintenance Costs	Replace Costs	Operating Costs	Totals By Equip. Type							
				Labor	Equipment	Materials	ManHours								
CCTV	109	10	28	\$70,959	\$45,671	\$17,767	218.0	\$476,000	\$2,507	\$706,374	1090.0				
ILD Cabinet	158	0	0	\$57,038	\$42,344	\$8,058	711.0	\$4,582	\$8,374	\$128,612	869.0				
Node Room	12	0	0	\$1,776	\$2,784	\$0	60.0	\$4,296	\$2,148	\$0	\$12,420	\$27,720			
PAD Cabinet	19	0	0	\$6,859	\$5,092	\$969	85.5	\$551	\$1,007	\$286	\$0	\$855	\$15,599		
Power Cabinet	187	44	0	\$27,676	\$43,384	\$0	935.0	\$16,830	\$8,415	\$16,830	1122.0	\$0	\$113,135	2057.0	
Ramp Meter/ILD	136	18	0	\$49,096	\$36,448	\$6,936	612.0	\$139,128	\$114,240	\$113,634	5168.0	\$0	\$6,120	\$465,602	
Ramp Meter/PAD	11	0	0	\$7,953	\$5,896	\$1,133	49.5	\$11,253	\$9,240	\$10,593	418.0	\$0	\$495	\$46,563	
TMS	378	132	0	\$136,458	\$101,304	\$19,278	1701.0	\$10,962	\$20,034	\$3,444	378.0	\$0	\$14,364	\$305,844	
VMS	62	6	0	\$36,766	\$43,152	\$0	930.0	\$22,878	\$15,500	\$0	1550.0	\$0	\$64,170	\$182,466	
Totals:	1072	210	28	\$394,581	\$326,075	\$106,897	5956.0	\$228,247	\$190,403	\$162,777	9319.0	\$476,000	\$106,935	\$1,991,916	15275.0

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Demand Maintenance Costs	Replace Costs	Operating Costs	Totals By Equip. Type							
				Labor	Equipment	Materials	ManHours								
CCTV	115	6	0	\$74,865	\$48,185	\$74,405	920.0	\$18,745	\$12,075	\$17,658	230.0	\$0	\$2,645	\$248,578	1150.0
ILD Cabinet	158	0	0	\$57,038	\$42,344	\$8,058	711.0	\$4,582	\$8,374	\$2,212	158.0	\$0	\$6,004	\$128,612	869.0
Node Room	12	0	10	\$1,776	\$2,784	\$0	60.0	\$4,296	\$2,148	\$4,296	288.0	\$300,000	\$12,420	\$327,720	348.0
PAD Cabinet	19	0	0	\$6,859	\$5,092	\$969	85.5	\$551	\$1,007	\$286	19.0	\$0	\$855	\$15,599	104.5
Power Cabinet	201	14	0	\$29,748	\$46,632	\$0	1005.0	\$18,090	\$9,045	\$18,090	1206.0	\$0	\$121,605	2211.0	
Ramp Meter/ILD	142	6	41	\$51,262	\$38,056	\$7,242	639.0	\$145,266	\$119,280	\$91,485	5396.0	\$615,000	\$6,390	\$1,073,981	6035.0
Ramp Meter/PAD	11	0	0	\$7,953	\$5,896	\$1,133	49.5	\$11,253	\$9,240	\$10,593	418.0	\$0	\$495	\$46,563	467.5
TMS	420	42	0	\$151,620	\$112,560	\$21,420	1890.0	\$12,180	\$22,260	\$5,292	420.0	\$0	\$15,960	\$341,292	2310.0
VMS	66	4	0	\$39,138	\$45,936	\$0	990.0	\$24,354	\$16,500	\$0	1850.0	\$0	\$68,310	\$194,238	2640.0
Totals:	1144	72	51	\$420,259	\$347,485	\$113,227	6350.0	\$239,317	\$199,929	\$149,892	9785.0	\$915,000	\$113,079	\$2,448,188	16135.0

Phoenix FMS

Year: 2004

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
CCTV	128	13	0	\$83,328	\$53,632	\$82,816	1024.0	\$20,864	\$13,440	\$18,630	256.0	\$0	\$2,944	\$275,654	1	1280.0		
ILD Cabinet	158	0	0	\$57,038	\$42,344	\$8,058	711.0	\$4,582	\$8,374	\$2,212	158.0	\$0	\$6,004	\$128,612	1	869.0		
Node Room	12	0	0	\$1,776	\$2,784	\$0	60.0	\$4,296	\$2,148	\$4,296	288.0	\$0	\$12,420	\$27,720	1	348.0		
PAD Cabinet	19	0	0	\$6,859	\$5,092	\$969	85.5	\$551	\$1,007	\$266	19.0	\$0	\$855	\$15,599	1	104.5		
Power Cabinet	227	26	0	\$33,596	\$52,664	\$0	1135.0	\$20,430	\$10,215	\$20,430	1362.0	\$0	\$0	\$137,335	1	2497.0		
Ramp Meter/ILD	162	20	0	\$58,482	\$43,416	\$8,262	729.0	\$165,726	\$136,080	\$136,746	6156.0	\$0	\$7,290	\$556,002	1	6885.0		
Ramp Meter/PAD	11	0	0	\$7,953	\$5,896	\$1,133	49.5	\$11,253	\$9,240	\$10,593	418.0	\$0	\$495	\$46,563	1	467.5		
TMS	498	78	0	\$79,778	\$133,464	\$25,398	2241.0	\$14,442	\$26,394	\$5,880	498.0	\$0	\$18,924	\$404,280	1	2739.0		
VMS	74	8	0	\$43,882	\$51,504	\$0	1110.0	\$27,306	\$18,500	\$13,680	1850.0	\$0	\$76,590	\$231,462	1	2960.0		
Totals:	1289	145	0	\$472,692	\$390,796	\$126,636	7145.0	\$269,450	\$225,398	\$212,753	11005.0	\$0	\$125,522	\$1,823,227	1	18160.0		

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
CCTV	139	11	14	\$90,489	\$58,241	\$89,933	1112.0	\$22,657	\$14,595	\$18,488	278.0	\$238,000	\$3,197	\$55,580	1	1390.0		
ILD Cabinet	158	0	121	\$57,038	\$42,344	\$8,058	711.0	\$4,582	\$8,374	\$518	158.0	\$1,089,000	\$6,004	\$1,215,918	1	869.0		
Node Room	12	0	0	\$1,776	\$2,784	\$0	60.0	\$4,296	\$2,148	\$4,296	288.0	\$0	\$12,420	\$27,720	1	348.0		
PAD Cabinet	19	0	0	\$6,859	\$5,092	\$969	85.5	\$551	\$1,007	\$286	19.0	\$0	\$855	\$15,599	1	104.5		
Power Cabinet	249	22	0	\$36,852	\$57,768	\$0	1245.0	\$22,410	\$11,205	\$22,410	1494.0	\$0	\$0	\$150,645	1	2739.0		
Ramp Meter/ILD	181	19	0	\$65,341	\$48,508	\$9,231	814.5	\$185,163	\$152,040	\$156,006	6878.0	\$0	\$8,145	\$624,434	1	7692.5		
Ramp Meter/PAD	11	0	0	\$7,953	\$5,896	\$1,133	49.5	\$11,253	\$9,240	\$10,593	418.0	\$0	\$495	\$46,563	1	467.5		
TMS	570	72	0	\$205,770	\$152,760	\$29,070	2565.0	\$16,530	\$30,210	\$6,972	570.0	\$0	\$21,660	\$462,972	1	3135.0		
VMS	80	6	0	\$47,440	\$55,680	\$0	1200.0	\$29,520	\$20,000	\$13,680	2000.0	\$0	\$82,800	\$249,120	1	3200.0		
Totals:	1419	130	135	\$519,518	\$429,073	\$138,394	7842.5	\$296,962	\$248,819	\$233,209	12103.0	\$1,327,000	\$135,576	\$3,328,551	1	18945.5		

Phoenix FMS

Year: 2006

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Equipment Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
CCTV	158	19	20	\$102,858	\$66,202	\$102,226	1264.0	\$25,754	\$16,590	\$19,278	316.0	\$340,000	\$3,634	\$676,542	1560.0
ILD Cabinet	158	0	0	\$57,038	\$42,344	\$8,058	711.0	\$4,582	\$8,374	\$2,212	158.0	\$0	\$6,004	\$128,612	869.0
Node Room	12	0	2	\$1,776	\$2,784	\$0	60.0	\$4,296	\$2,148	\$4,296	288.0	\$60,000	\$12,420	\$87,720	348.0
PAD Cabinet	19	0	0	\$6,859	\$5,092	\$969	85.5	\$551	\$1,007	\$266	19.0	\$0	\$855	\$15,599	104.5
Power Cabinet	291	42	0	\$43,068	\$67,512	\$0	1455.0	\$26,190	\$13,095	\$26,190	1746.0	\$0	\$0	\$176,055	3201.0
Ramp Meter/ILD	211	30	26	\$76,171	\$56,548	\$10,761	949.5	\$215,853	\$177,240	\$149,265	8018.0	\$390,000	\$9,495	\$1,085,333	8967.5
Ramp Meter/PAD	11	0	11	\$7,953	\$5,896	\$1,133	49.5	\$11,253	\$9,240	\$0	418.0	\$165,000	\$495	\$200,970	467.5
TMS	696	126	0	\$251,256	\$186,528	\$35,496	3132.0	\$20,184	\$36,888	\$7,980	696.0	\$0	\$26,448	\$564,780	3828.0
VMS	95	15	0	\$56,335	\$66,120	\$0	1425.0	\$35,055	\$23,750	\$13,680	2375.0	\$0	\$98,325	\$293,265	3800.0
Totals:	1651	232	59	\$603,314	\$499,026	\$158,643	9131.5	\$343,718	\$288,332	\$223,167	14034.0	\$955,000	\$157,676	\$3,228,876	23165.6

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Equipment Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
CCTV	165	7	9	\$107,415	\$69,135	\$106,755	1320.0	\$26,895	\$17,325	\$24,138	330.0	\$153,000	\$3,755	\$508,458	1650.0
ILD Cabinet	158	0	0	\$57,038	\$42,344	\$8,058	711.0	\$4,582	\$8,374	\$2,212	158.0	\$0	\$6,004	\$128,612	869.0
Node Room	12	0	0	\$1,776	\$2,784	\$0	60.0	\$4,296	\$2,148	\$4,296	288.0	\$0	\$12,420	\$27,720	348.0
PAD Cabinet	19	0	0	\$6,859	\$5,092	\$969	85.5	\$551	\$1,007	\$266	19.0	\$0	\$855	\$15,599	104.5
Power Cabinet	305	14	0	\$45,140	\$70,760	\$0	1525.0	\$27,450	\$13,725	\$27,450	1830.0	\$0	\$0	\$184,525	3355.0
Ramp Meter/ILD	223	12	0	\$80,503	\$59,764	\$11,373	1003.5	\$228,129	\$187,320	\$203,193	8474.0	\$0	\$10,035	\$780,317	9477.5
Ramp Meter/PAD	11	0	0	\$7,953	\$5,896	\$1,133	49.5	\$11,253	\$9,240	\$10,593	418.0	\$0	\$495	\$46,563	467.5
TMS	738	42	0	\$266,418	\$197,784	\$37,638	3321.0	\$21,402	\$39,114	\$9,744	738.0	\$0	\$28,044	\$600,144	4059.0
VMS	100	5	0	\$59,300	\$69,600	\$0	1500.0	\$36,900	\$25,000	\$17,670	2500.0	\$0	\$103,500	\$311,970	4000.0
Totals:	1731	80	9	\$632,402	\$523,159	\$165,926	9575.5	\$361,458	\$303,253	\$299,562	14755.0	\$153,000	\$165,148	\$2,603,908	24330.5

Phoenix FMS

Year: 2003

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type			
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours				
CCTV	172	7	7	\$111,972	\$72,068	\$111,284	1376.0	\$28,036	\$18,060	\$25,596	344.0	\$119,000	\$3,956	\$489,972	1720.0
ILD Cabinet	158	0	37	\$57,038	\$42,344	\$8,058	711.0	\$4,582	\$8,374	\$1,694	158.0	\$333,000	\$6,004	\$461,094	869.0
Node Room	12	0	0	\$1,776	\$2,784	\$0	60.0	\$4,296	\$2,148	\$4,296	288.0	\$0	\$12,420	\$27,720	348.0
PAD Cabinet	19	0	19	\$6,859	\$5,092	\$969	85.5	\$551	\$1,007	\$0	19.0	\$171,000	\$855	\$186,333	104.5
Power Cabinet	321	16	0	\$47,508	\$74,472	\$0	1605.0	\$28,890	\$14,445	\$28,890	1926.0	\$0	\$0	\$194,205	3531.0
Ramp Meter/ILD	237	14	10	\$85,557	\$63,516	\$12,087	1066.5	\$242,451	\$199,080	\$205,119	906.0	\$150,000	\$10,665	\$968,475	10072.5
Ramp Meter/PAD	11	0	0	\$7,953	\$5,896	\$1,133	49.5	\$11,253	\$9,240	\$10,593	418.0	\$0	\$495	\$46,563	467.5
TMS	786	48	0	\$283,746	\$210,648	\$40,086	3537.0	\$22,794	\$41,658	\$10,332	786.0	\$0	\$29,868	\$639,132	4323.0
VMS	106	6	0	\$62,858	\$73,776	\$0	1590.0	\$39,114	\$26,500	\$17,670	2650.0	\$0	\$109,710	\$329,628	4240.0
Totals:	1822	91	73	\$665,267	\$550,596	\$173,617	10080.5	\$381,967	\$320,512	\$304,190	15595.0	\$773,000	\$173,973	\$3,343,122	25676.5

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type			
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours				
CCTV	181	9	21	\$117,831	\$75,839	\$117,107	1448.0	\$29,503	\$19,005	\$24,462	362.0	\$357,000	\$4,163	\$744,910	1810.0
ILD Cabinet	158	0	0	\$57,038	\$42,344	\$8,058	711.0	\$4,582	\$8,374	\$2,212	158.0	\$0	\$6,004	\$128,612	869.0
Node Room	12	0	0	\$1,776	\$2,784	\$0	60.0	\$4,296	\$2,148	\$4,296	288.0	\$0	\$12,420	\$27,720	348.0
PAD Cabinet	19	0	0	\$6,859	\$5,092	\$969	85.5	\$551	\$1,007	\$266	19.0	\$0	\$855	\$15,599	104.5
Power Cabinet	341	20	0	\$50,468	\$79,112	\$0	1705.0	\$30,690	\$15,345	\$30,690	2046.0	\$0	\$0	\$206,305	3751.0
Ramp Meter/ILD	249	12	12	\$89,889	\$66,732	\$12,699	1120.5	\$254,727	\$209,160	\$216,675	9462.0	\$180,000	\$11,205	\$1,041,087	10582.5
Ramp Meter/PAD	11	0	0	\$7,953	\$5,896	\$1,133	49.5	\$11,253	\$9,240	\$10,593	418.0	\$0	\$495	\$46,563	467.5
TMS	846	60	0	\$305,406	\$226,728	\$43,146	3807.0	\$24,534	\$44,838	\$11,004	846.0	\$0	\$32,148	\$687,804	4653.0
VMS	113	7	0	\$67,009	\$78,648	\$0	1695.0	\$41,697	\$28,250	\$21,090	2825.0	\$0	\$116,955	\$353,649	4520.0
Totals:	1930	108	33	\$704,229	\$583,175	\$183,112	10681.5	\$401,833	\$337,367	\$321,288	16424.0	\$537,000	\$184,245	\$3,252,249	27105.5

Phoenix FMS

Year: 2010

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Operating Costs			Totals By Equip. Type		
	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours	
CCTV	206	25	38	\$34,106	\$86,314	\$133,282	1648.0	\$33,578	\$21,630	\$23,166	412.0	\$646,000	\$4,738	\$1,082,814	2060.0
ILD Cabinet	158	0	0	\$57,038	\$42,344	\$8,058	711.0	\$4,582	\$8,374	\$2,212	158.0	\$0	\$6,004	\$128,612	869.0
Node Room	12	0	0	\$1,776	\$2,784	\$0	60.0	\$4,296	\$2,148	\$4,296	288.0	\$0	\$12,420	\$27,720	348.0
PAD Cabinet	19	0	0	\$6,859	\$5,092	\$969	85.5	\$551	\$1,007	\$266	19.0	\$0	\$855	\$15,599	104.5
Power Cabinet	391	50	50	\$57,868	\$90,712	\$0	1955.0	\$35,190	\$17,595	\$35,190	2346.0	\$100,000	\$0	\$336,555	4301.0
Ramp Meter/ILD	281	32	29	\$101,441	\$75,308	\$14,331	1264.5	\$287,463	\$236,040	\$211,860	10678.0	\$455,000	\$12,645	\$1,374,088	11942.5
Ramp Meter/PAD	11	0	0	\$7,953	\$5,896	\$1,133	49.5	\$11,253	\$9,240	\$10,593	418.0	\$0	\$495	\$46,563	467.5
TMS	996	150	54	\$359,556	\$266,928	\$50,796	4482.0	\$28,884	\$52,788	\$11,088	996.0	\$486,000	\$37,848	\$1,293,888	5478.0
VMS	128	15	24	\$75,904	\$89,088	\$0	1920.0	\$47,232	\$32,000	\$9,690	3200.0	\$2,616,000	\$132,480	\$3,002,394	5120.0
Totals:	2202	272	195	\$802,501	\$664,466	\$208,569	12175.5	\$453,029	\$380,822	\$308,361	18515.0	\$4,283,000	\$207,485	\$7,388,233	30690.5

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Operating Costs			Totals By Equip. Type		
	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours	
CCTV	231	25	6	\$150,381	\$96,789	\$149,457	1848.0	\$37,653	\$24,255	\$32,400	462.0	\$102,000	\$5,313	\$588,248	2310.0
ILD Cabinet	158	0	0	\$57,038	\$42,344	\$8,058	711.0	\$4,582	\$8,374	\$2,212	158.0	\$0	\$6,004	\$128,612	869.0
Node Room	12	0	0	\$1,776	\$2,784	\$0	60.0	\$4,296	\$2,148	\$4,296	288.0	\$0	\$12,420	\$27,720	348.0
PAD Cabinet	19	0	0	\$6,859	\$5,092	\$969	85.5	\$551	\$1,007	\$266	19.0	\$0	\$855	\$15,599	104.5
Power Cabinet	441	50	0	\$65,298	\$102,312	\$0	2205.0	\$39,690	\$19,845	\$39,690	2846.0	\$0	\$0	\$266,805	4851.0
Ramp Meter/ILD	303	22	18	\$109,383	\$81,204	\$15,453	1363.5	\$39,969	\$254,520	\$253,269	11514.0	\$270,000	\$13,635	\$1,307,433	12877.5
Ramp Meter/PAD	11	0	0	\$7,953	\$5,896	\$1,133	49.5	\$11,253	\$9,240	\$10,593	418.0	\$0	\$495	\$46,563	467.5
TMS	1146	150	42	\$413,706	\$307,128	\$58,446	5157.0	\$33,234	\$80,738	\$13,356	1146.0	\$378,000	\$43,548	\$1,308,156	6030.0
VMS	143	15	0	\$84,799	\$99,528	\$0	2145.0	\$52,767	\$35,750	\$18,240	3575.0	\$0	\$14,005	\$439,089	5720.0
Totals:	2464	262	66	\$897,163	\$743,077	\$233,516	13624.5	\$493,995	\$415,877	\$374,322	20226.0	\$750,000	\$230,275	\$4,138,225	33550.5

Phoenix FMS

Year: 2012

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	
CCTV	231	0	13	\$150,381	\$96,789	\$149,457	1848.0	\$37,653	\$24,255	\$35,316	462.0	\$221,000
ILD Cabinet	158	0	0	\$57,038	\$42,344	\$8,058	711.0	\$4,582	\$8,374	\$2,212	158.0	\$0
Node Room	12	0	10	\$1,776	\$2,784	\$0	60.0	\$4,296	\$2,148	\$4,296	288.0	\$300,000
PAD Cabinet	19	0	0	\$6,859	\$5,092	\$969	85.5	\$551	\$1,007	\$266	19.0	\$0
Power Cabinet	441	0	0	\$65,268	\$102,312	\$0	2205.0	\$39,690	\$19,845	\$39,690	2846.0	\$0
Ramp Meter/ILD	303	0	47	\$109,383	\$81,204	\$15,453	1363.5	\$309,969	\$254,520	\$246,528	11514.0	\$705,000
Ramp Meter/PAD	11	0	0	\$7,953	\$5,896	\$1,133	49.5	\$11,253	\$9,240	\$10,593	418.0	\$0
TMS	1146	0	150	\$413,706	\$307,128	\$58,446	5157.0	\$33,234	\$60,738	\$13,944	1146.0	\$1,350,000
VMS	143	0	0	\$84,799	\$99,528	\$0	2145.0	\$52,767	\$35,750	\$21,660	3575.0	\$0
Totals:	2464	0	220	\$897,163	\$743,077	\$233,516	13624.5	\$493,995	\$415,877	\$374,505	20226.0	\$2,576,000
												\$230,275
												\$5,984,408
												\$33850.5

Prescott Rural ITS

Year: 1998		Preventive Maintenance Costs			Demand Maintenance Costs			Replace Equipment Costs			Operating Costs			Totals By Equipment Type	
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	Costs	Costs	ManHours
VMS	2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$5,886	80.0
Totals:	2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$5,886	80.0

Year: 1999										Year: 2000										
Equipment Type					Total Units					Preventive Maintenance Costs					Demand Maintenance Costs					Totals By Equip. Type
VMS	2	0	0	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Replace Costs	Operating Costs	Costs	ManHours	
Totals:	2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	50.0	\$0	\$500	\$0	50.0	\$0	\$2,070	\$5,886	\$0.0	\$0.0		

Equipment Type	Preventive Maintenance Costs						Demand Maintenance Costs						Totals By Equipment Type				
	New Units			Replaced Units			Labor			Equipment			Materials			Costs	ManHours
	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
VMS	2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$5,886	80.0		
Totals:	2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$5,886	80.0		

Year:	2001	Equipment Type	Total	New	Replaced	Preventive Maintenance Costs			Demand Maintenance Costs			Replace	Operating	Totals By Equipment Type			
			Units	Units	Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	Costs	ManHours	
			VMS	2	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$5,886	80.0
Totals:			2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$5,886	80.0

Year:	2002										2003									
	Equipment Type					Preventive Maintenance Costs					Demand Maintenance Costs					Totals By Equipment Type				
	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	Man-Hours	Labor	Equipment	Materials	Man-Hours	Replace Costs	Operating Costs	Replace Costs	Operating Costs	Costs	Man-Hours			
VMS	2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$0	\$2,070	\$5,886	80.0				
Total:	2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$0	\$2,070	\$5,886	80.0				

Prescott Rural ITS

Year: 2003			Preventive Maintenance Costs			Demand Maintenance Costs			Replace Operating Costs			Totals By Equip. Type		
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
RWIS-RPU	2	2	0	\$296	\$464	\$0	10.0	\$670	\$0	\$0	21.0	\$0	\$340	\$1,770
VMS	3	1	0	\$1,779	\$2,088	\$0	45.0	\$1,107	\$750	\$0	75.0	\$0	\$3,105	\$8,829
Totals:	5	3	0	\$2,075	\$2,552	\$0	55.0	\$1,777	\$750	\$0	96.0	\$0	\$3,445	\$10,699
														151.0

Year: 2004			Preventive Maintenance Costs			Demand Maintenance Costs			Replace Operating Costs			Totals By Equip. Type		
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
RWIS-RPU	2	0	0	\$296	\$464	\$0	10.0	\$670	\$0	\$0	21.0	\$0	\$340	\$1,770
VMS	3	0	0	\$1,779	\$2,088	\$0	45.0	\$1,107	\$750	\$0	75.0	\$0	\$3,105	\$8,829
Totals:	5	0	0	\$2,075	\$2,552	\$0	55.0	\$1,777	\$750	\$0	96.0	\$0	\$3,445	\$10,699
														151.0

Year: 2005			Preventive Maintenance Costs			Demand Maintenance Costs			Replace Operating Costs			Totals By Equip. Type		
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
RWIS-RPU	2	0	0	\$296	\$464	\$0	10.0	\$670	\$0	\$5,226	21.0	\$0	\$340	\$6,996
VMS	3	0	0	\$1,779	\$2,088	\$0	45.0	\$1,107	\$750	\$1,140	75.0	\$0	\$3,105	\$9,969
Totals:	5	0	0	\$2,075	\$2,552	\$0	55.0	\$1,777	\$750	\$6,366	96.0	\$0	\$3,445	\$16,965
														151.0

Year: 2006			Preventive Maintenance Costs			Demand Maintenance Costs			Replace Operating Costs			Totals By Equip. Type		
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
CCTV	1	1	0	\$651	\$419	\$647	8.0	\$163	\$105	\$0	2.0	\$0	\$23	\$2,008
RWIS-RPU	2	0	0	\$296	\$464	\$0	10.0	\$670	\$0	\$5,226	21.0	\$0	\$340	\$6,996
VDS	1	1	0	\$138	\$128	\$77	9.0	\$29	\$53	\$0	1.0	\$0	\$45	\$470
VMS	4	1	0	\$2,372	\$2,784	\$0	60.0	\$1,476	\$1,000	\$1,140	100.0	\$0	\$4,140	\$12,912
Totals:	8	3	0	\$3,457	\$3,795	\$724	87.0	\$2,338	\$1,158	\$6,366	124.0	\$0	\$4,548	\$22,386
														211.0

Prescott Rural ITS

Year: 2007

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
CCTV	1	0	0	\$651	\$419	\$647	8.0	\$163	\$105	\$162	2.0	\$0	\$23	\$2,170	10.0	
RWIS-RPU	2	0	0	\$296	\$464	\$0	10.0	\$670	\$0	\$5,226	21.0	\$0	\$340	\$6,996	31.0	
VDS	1	0	0	\$138	\$128	\$77	9.0	\$29	\$53	\$0	1.0	\$0	\$45	\$470	10.0	
VMS	4	0	0	\$2,372	\$2,784	\$0	60.0	\$1,476	\$1,000	\$11,140	100.0	\$0	\$4,140	\$12,912	160.0	
Totals:	8	0	0	\$3,457	\$3,795	\$724	87.0	\$2,338	\$1,158	\$6,528	124.0	\$0	\$4,548	\$22,648	211.0	

Year: 2008

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
CCTV	1	0	0	\$651	\$419	\$647	8.0	\$163	\$105	\$162	2.0	\$0	\$23	\$2,170	10.0	
RWIS-RPU	2	0	0	\$296	\$464	\$0	10.0	\$670	\$0	\$5,226	21.0	\$0	\$340	\$6,996	31.0	
VDS	1	0	0	\$138	\$128	\$77	9.0	\$29	\$53	\$14	1.0	\$0	\$45	\$484	10.0	
VMS	5	1	0	\$2,965	\$3,480	\$0	75.0	\$1,845	\$1,250	\$1,140	125.0	\$0	\$5,175	\$15,855	200.0	
Totals:	9	1	0	\$4,050	\$4,491	\$724	102.0	\$2,707	\$1,408	\$6,542	149.0	\$0	\$5,583	\$26,505	251.0	

Year: 2009

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
CCTV	1	0	0	\$651	\$419	\$647	8.0	\$163	\$105	\$162	2.0	\$0	\$23	\$2,170	10.0	
RWIS-RPU	2	0	0	\$296	\$464	\$0	10.0	\$670	\$0	\$5,226	21.0	\$0	\$340	\$6,996	31.0	
VDS	1	0	0	\$138	\$128	\$77	9.0	\$29	\$53	\$14	1.0	\$0	\$45	\$484	10.0	
VMS	5	0	0	\$2,965	\$3,480	\$0	75.0	\$1,845	\$1,250	\$1,140	125.0	\$0	\$5,175	\$15,855	200.0	
Totals:	9	0	0	\$4,050	\$4,491	\$724	102.0	\$2,707	\$1,408	\$6,542	149.0	\$0	\$5,583	\$26,505	251.0	

Prescott Rural ITS

Year: 2010

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
CCTV	1	0	0	\$651	\$419	\$647	8.0	\$163	\$105	\$162	2.0	\$0	\$23	\$2,170	10.0	
RWIS-RPU	2	0	0	\$296	\$464	\$0	10.0	\$670	\$0	\$5,226	21.0	\$0	\$340	\$6,996	31.0	
VDS	1	0	0	\$138	\$128	\$77	9.0	\$29	\$53	\$14	1.0	\$0	\$45	\$484	10.0	
VMS	5	0	0	\$2,965	\$3,480	\$0	75.0	\$1,845	\$1,250	\$1,140	125.0	\$0	\$5,175	\$15,855	200.0	
Totals:	9	0	0	\$4,050	\$4,491	\$724	102.0	\$2,707	\$1,408	\$6,542	149.0	\$0	\$5,583	\$26,505	261.0	

Year: 2011

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
CCTV	1	0	0	\$651	\$419	\$647	8.0	\$163	\$105	\$162	2.0	\$0	\$23	\$2,170	10.0	
RWIS-RPU	2	0	0	\$296	\$464	\$0	10.0	\$670	\$0	\$5,226	21.0	\$0	\$340	\$6,996	31.0	
VDS	1	0	0	\$138	\$128	\$77	9.0	\$29	\$53	\$14	1.0	\$0	\$45	\$484	10.0	
VMS	5	0	2	\$2,965	\$3,480	\$0	75.0	\$1,845	\$1,250	\$0	125.0	\$218,000	\$5,175	\$232,715	200.0	
Totals:	9	0	2	\$4,050	\$4,491	\$724	102.0	\$2,707	\$1,408	\$6,542	149.0	\$0	\$5,583	\$242,365	251.0	

Year: 2012

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
CCTV	1	0	0	\$651	\$419	\$647	8.0	\$163	\$105	\$162	2.0	\$0	\$23	\$2,170	10.0	
RWIS-RPU	2	0	0	\$296	\$464	\$0	10.0	\$670	\$0	\$5,226	21.0	\$0	\$340	\$6,996	31.0	
VDS	1	0	0	\$138	\$128	\$77	9.0	\$29	\$53	\$14	1.0	\$0	\$45	\$484	10.0	
VMS	5	0	0	\$2,965	\$3,480	\$0	75.0	\$1,845	\$1,250	\$0	125.0	\$0	\$5,175	\$14,715	200.0	
Totals:	9	0	0	\$4,050	\$4,491	\$724	102.0	\$2,707	\$1,408	\$5,462	149.0	\$0	\$5,583	\$24,365	251.0	

Safford Rural ITS

Year: 1998

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type	
RWIS-RPU	2	2	0	\$296	\$464	\$0	10.0	\$670	\$0	21.0	\$0	\$340	\$1,770	\$31.0			
VMS	2	2	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$5,886	80.0		
Totals:	4	4	0	\$1,482	\$1,856	\$0	40.0	\$1,408	\$500	\$0	71.0	\$0	\$2,410	\$7,656	111.0		

Year: 1999

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type	
RWIS-RPU	2	0	0	\$296	\$464	\$0	10.0	\$670	\$0	21.0	\$0	\$340	\$1,770	\$31.0			
VMS	2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$5,886	80.0		
Totals:	4	0	0	\$1,482	\$1,856	\$0	40.0	\$1,408	\$500	\$0	71.0	\$0	\$2,410	\$7,656	111.0		

Year: 2000

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type	
RWIS-RPU	2	0	0	\$296	\$464	\$0	10.0	\$670	\$0	21.0	\$0	\$340	\$6,996	31.0			
VMS	2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$5,886	80.0		
Totals:	4	0	0	\$1,482	\$1,856	\$0	40.0	\$1,408	\$500	\$0	71.0	\$0	\$2,410	\$12,882	111.0		

Year: 2001

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type	
RWIS-RPU	2	0	0	\$296	\$464	\$0	10.0	\$670	\$0	21.0	\$0	\$340	\$6,996	31.0			
VMS	2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$5,886	80.0		
Totals:	4	0	0	\$1,482	\$1,856	\$0	40.0	\$1,408	\$500	\$0	71.0	\$0	\$2,410	\$12,882	111.0		

Stafford Rural ITS

Year: 2002				Preventive Maintenance Costs				Demand Maintenance Costs				Replace Costs				Operating Costs				Totals By Equip. Type			
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
RWIS-RPU	2	0	0	\$296	\$464	\$0	10.0	\$670	\$0	\$5,226	21.0	\$0	\$340	\$6,996	31.0								
VMS	4	2	0	\$2,372	\$2,784	\$0	60.0	\$1,476	\$1,000	\$0	100.0	\$0	\$4,140	\$11,772	160.0								
Totals:	6	2	0	\$2,668	\$3,248	\$0	70.0	\$2,146	\$1,000	\$5,226	121.0	\$0	\$4,480	\$18,768	191.0								

Year: 2003				Preventive Maintenance Costs				Demand Maintenance Costs				Replace Costs				Operating Costs				Totals By Equip. Type			
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
RWIS-RPU	2	0	0	\$296	\$464	\$0	10.0	\$670	\$0	\$5,226	21.0	\$0	\$340	\$6,996	31.0								
VMS	5	1	0	\$2,965	\$3,480	\$0	75.0	\$1,845	\$1,250	\$0	125.0	\$0	\$5,175	\$14,715	200.0								
Totals:	7	1	0	\$3,261	\$3,944	\$0	85.0	\$2,515	\$1,250	\$5,226	146.0	\$0	\$5,515	\$21,711	231.0								

Year: 2004				Preventive Maintenance Costs				Demand Maintenance Costs				Replace Costs				Operating Costs				Totals By Equip. Type			
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
RWIS-RPU	2	0	0	\$296	\$464	\$0	10.0	\$670	\$0	\$5,226	21.0	\$0	\$340	\$6,996	31.0								
VMS	5	0	0	\$2,965	\$3,480	\$0	75.0	\$1,845	\$1,250	\$0	125.0	\$0	\$5,175	\$14,715	200.0								
Totals:	7	0	0	\$3,261	\$3,944	\$0	85.0	\$2,515	\$1,250	\$5,226	146.0	\$0	\$5,515	\$21,711	231.0								

Year: 2005				Preventive Maintenance Costs				Demand Maintenance Costs				Replace Costs				Operating Costs				Totals By Equip. Type			
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
RWIS-RPU	2	0	0	\$296	\$464	\$0	10.0	\$670	\$0	\$5,226	21.0	\$0	\$340	\$6,996	31.0								
VMS	8	3	0	\$4,744	\$5,568	\$0	120.0	\$2,952	\$2,000	\$0	200.0	\$0	\$8,280	\$23,544	320.0								
Totals:	10	3	0	\$5,040	\$6,032	\$0	130.0	\$3,622	\$2,000	\$5,226	221.0	\$0	\$8,620	\$30,640	351.0								

Safford Rural ITS

Year: 2006

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
RWIS-RPU	4	2	0	\$592	\$928	\$0	20.0	\$1,340	\$0	\$5,226	42.0	\$0	\$680	\$8,766	62.0	
VMS	14	6	0	\$8,302	\$9,744	\$0	210.0	\$5,166	\$3,500	\$0	350.0	\$0	\$14,490	\$41,202	560.0	
Totals:	18	8	0	\$8,894	\$10,672	\$0	230.0	\$6,506	\$3,500	\$5,226	392.0	\$0	\$15,170	\$49,968	622.0	

Year: 2007

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
RWIS-RPU	4	0	0	\$592	\$928	\$0	20.0	\$1,340	\$0	\$5,226	42.0	\$0	\$680	\$8,766	62.0	
VMS	14	0	0	\$8,302	\$9,744	\$0	210.0	\$5,166	\$3,500	\$0	350.0	\$0	\$14,490	\$41,202	560.0	
Totals:	18	0	0	\$8,894	\$10,672	\$0	230.0	\$6,506	\$3,500	\$5,226	392.0	\$0	\$15,170	\$49,968	622.0	

Year: 2008

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
RWIS-RPU	4	0	0	\$592	\$928	\$0	20.0	\$1,340	\$0	\$10,452	42.0	\$0	\$680	\$13,992	62.0	
VMS	14	0	0	\$8,302	\$9,744	\$0	210.0	\$5,166	\$3,500	\$1,140	350.0	\$0	\$14,490	\$42,342	560.0	
Totals:	18	0	0	\$8,894	\$10,672	\$0	230.0	\$6,506	\$3,500	\$11,592	392.0	\$0	\$15,170	\$56,334	622.0	

Year: 2009

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
RWIS-RPU	4	0	2	\$592	\$928	\$0	20.0	\$1,340	\$0	\$5,226	42.0	\$0	\$40,000	\$48,766	62.0	
VMS	14	0	0	\$8,302	\$9,744	\$0	210.0	\$5,166	\$3,500	\$1,140	350.0	\$0	\$14,490	\$42,342	560.0	
Totals:	18	0	2	\$8,894	\$10,672	\$0	230.0	\$6,506	\$3,500	\$6,366	392.0	\$0	\$40,000	\$15,170	\$91,108	622.0

Safford Rural ITS

Year: 2010				Preventive Maintenance Costs				Demand Maintenance Costs				Replace Costs				Operating Costs				Totals By Equip. Type			
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours		
RWIS-RPU	14	10	0	\$2,072	\$3,248	\$0	70.0	\$4,690	\$0	\$5,226	147.0	\$0	\$2,380	\$17,616	217.0								
VMS	14	0	0	\$8,302	\$9,744	\$0	210.0	\$5,166	\$3,500	\$1,140	350.0	\$0	\$14,490	\$42,342	560.0								
Totals:	28	10	0	\$10,374	\$12,992	\$0	280.0	\$9,856	\$3,500	\$6,366	497.0	\$0	\$16,870	\$59,958	777.0								

Year: 2011				Preventive Maintenance Costs				Demand Maintenance Costs				Replace Costs				Operating Costs				Totals By Equip. Type			
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours		
RWIS-RPU	14	0	0	\$2,072	\$3,248	\$0	70.0	\$4,690	\$0	\$10,452	147.0	\$0	\$2,380	\$22,842	217.0								
VMS	14	0	0	\$8,302	\$9,744	\$0	210.0	\$5,166	\$3,500	\$1,140	350.0	\$0	\$14,490	\$42,342	560.0								
Totals:	28	0	0	\$10,374	\$12,992	\$0	280.0	\$9,856	\$3,500	\$11,592	497.0	\$0	\$16,870	\$66,184	777.0								

Year: 2012				Preventive Maintenance Costs				Demand Maintenance Costs				Replace Costs				Operating Costs				Totals By Equip. Type			
Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours		
RWIS-RPU	14	0	0	\$2,072	\$3,248	\$0	70.0	\$4,690	\$0	\$36,582	147.0	\$0	\$2,380	\$48,972	217.0								
VMS	14	0	0	\$8,302	\$9,744	\$0	210.0	\$5,166	\$3,500	\$2,280	350.0	\$0	\$14,490	\$43,482	560.0								
Totals:	28	0	0	\$10,374	\$12,992	\$0	280.0	\$9,856	\$3,500	\$38,862	497.0	\$0	\$16,870	\$92,454	777.0								

TPG

Year: 1998

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
A/C - Piezo	2	0	0	\$334	\$334	\$334	10.0	\$334	\$334	\$334	10.0	\$0	\$196	\$2,200	20.0			
W/M - Piezo	6	0	0	\$5,604	\$5,604	\$5,604	60.0	\$5,604	\$5,604	\$5,604	60.0	\$0	\$588	\$34,212	120.0			
Totals:	8	0	0	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$0	\$784	\$36,412	140.0			

Year: 1999

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
A/C - Piezo	2	0	0	\$334	\$334	\$334	10.0	\$334	\$334	\$334	10.0	\$0	\$196	\$2,200	20.0			
W/M - Piezo	6	0	0	\$5,604	\$5,604	\$5,604	60.0	\$5,604	\$5,604	\$5,604	60.0	\$0	\$588	\$34,212	120.0			
Totals:	8	0	0	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$0	\$784	\$36,412	140.0			

Year: 2000

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
A/C - Piezo	2	0	2	\$334	\$334	\$334	10.0	\$334	\$334	\$334	10.0	\$20,000	\$196	\$21,866	20.0			
W/M - Piezo	6	0	6	\$5,604	\$5,604	\$5,604	60.0	\$5,604	\$5,604	\$5,604	60.0	\$60,000	\$588	\$88,608	120.0			
Totals:	8	0	8	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$80,000	\$784	\$110,474	140.0			

Year: 2001

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
A/C - Piezo	2	0	0	\$334	\$334	\$334	10.0	\$334	\$334	\$334	10.0	\$0	\$196	\$2,200	20.0			
W/M - Piezo	6	0	0	\$5,604	\$5,604	\$5,604	60.0	\$5,604	\$5,604	\$5,604	60.0	\$0	\$588	\$34,212	120.0			
Totals:	8	0	0	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$0	\$784	\$36,412	140.0			

TPG

Year: 2002	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type	
Equipment Type				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours		
AVC - Piezo	2	0	0	\$334	\$334	10.0	\$334	\$334	\$334	10.0	\$0	\$196	\$2,200 20.0
WIM - Piezo	6	0	0	\$5,604	\$5,604	60.0	\$5,604	\$5,604	\$5,604	60.0	\$0	\$588	\$34,212 120.0
Totals:	8	0	0	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$0	\$784	\$36,412 140.0

Year: 2003	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type	
Equipment Type				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours		
AVC - Piezo	2	0	0	\$334	\$334	10.0	\$334	\$334	\$334	10.0	\$0	\$196	\$2,200 20.0
WIM - Piezo	6	0	0	\$5,604	\$5,604	60.0	\$5,604	\$5,604	\$5,604	60.0	\$0	\$588	\$34,212 120.0
Totals:	8	0	0	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$0	\$784	\$36,412 140.0

Year: 2004	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type	
Equipment Type				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours		
AVC - Piezo	2	0	2	\$334	\$334	10.0	\$334	\$334	\$334	10.0	\$20,000	\$196	\$21,866 20.0
WIM - Piezo	6	0	6	\$5,604	\$5,604	60.0	\$5,604	\$5,604	\$5,604	60.0	\$60,000	\$588	\$88,608 120.0
Totals:	8	0	8	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$80,000	\$784	\$110,474 140.0

Year: 2005	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type	
Equipment Type				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours		
AVC - Piezo	2	0	0	\$334	\$334	10.0	\$334	\$334	\$334	10.0	\$0	\$196	\$2,200 20.0
WIM - Piezo	6	0	0	\$5,604	\$5,604	60.0	\$5,604	\$5,604	\$5,604	60.0	\$0	\$588	\$34,212 120.0
Totals:	8	0	0	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$0	\$784	\$36,412 140.0

TPG

Equipment Type	2006			2007			2008			2009			2010		
	Total Units	New Units	Replaced Units	Total Units	New Units	Replaced Units	Total Units	New Units	Replaced Units	Total Units	New Units	Replaced Units	Total Units	New Units	Replaced Units
AVC - Piezo	2	0	0	\$334	\$334	10.0	\$334	\$334	10.0	\$0	\$0	\$0	\$2,200	\$2,200	20.0
WIM - Piezo	6	0	0	\$5,604	\$5,604	60.0	\$5,604	\$5,604	60.0	\$0	\$0	\$0	\$34,212	\$34,212	120.0
Totals:	8	0	0	\$5,938	\$5,938	70.0	\$5,938	\$5,938	70.0	\$0	\$0	\$0	\$784	\$784	140.0

Year:	2007						2008						2009					
	Equipment Type			Preventive Maintenance Costs			Demand Maintenance Costs			Equipment Type			Preventive Maintenance Costs			Demand Maintenance Costs		
	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours
AVC - Piezo	2	0	0	\$334	\$334	\$334	10.0	\$334	\$334	\$334	10.0	\$0	\$0	\$0	\$196	\$196	\$2,200	20.0
WIM - Piezo	6	0	0	\$5,604	\$5,604	\$5,604	60.0	\$5,604	\$5,604	\$5,604	60.0	\$0	\$0	\$0	\$588	\$588	\$34,212	120.0
Totals:	8	0	0	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$0	\$0	\$0	\$784	\$784	\$36,412	140.0

Year:	2008						2009						2010						Totals By Equipment Type	
	Equipment Type			Total Units			New Units			Replaced Units			Preventive Maintenance Costs			Demand Maintenance Costs			Costs	
	Units	Units	Units	Units	Units	Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
AVC - Piezo	2	0	2	\$334	\$334	\$334	10.0	\$334	\$334	\$0	10.0	\$20,000	\$196	\$21,866	20.0					
WIM - Piezo	6	0	6	\$5,604	\$5,604	\$5,604	60.0	\$5,604	\$5,604	\$0	60.0	\$60,000	\$588	\$88,608	120.0					
Totals:	8	0	8	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$0	70.0	\$80,000	\$784	\$110,474	140.0					

Year:	2009			2010						2011						
	Equipment Type			Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Totals By Equipment Type			
	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Costs	ManHours
AVC - Piezo	2	0	0	\$334	\$334	10.0	\$334	\$334	10.0	\$334	\$334	10.0	\$0	\$196	\$2,200	20.0
WIM - Piezo	6	0	0	\$5,604	\$5,604	60.0	\$5,604	\$5,604	60.0	\$5,604	\$5,604	60.0	\$0	\$358	\$34,212	120.0
Totals:	8	0	0	\$5,938	\$5,938	55,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	55,938	\$0	\$784	\$36,412	140.0

TPG

Year: 2010

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
A/C - Piezo	2	0	0	\$334	\$334	\$334	10.0	\$334	\$334	\$334	10.0	\$0	\$196	\$2,200	20.0			
WIM - Piezo	6	0	0	\$5,604	\$5,604	\$5,604	60.0	\$5,604	\$5,604	\$5,604	60.0	\$0	\$588	\$34,212	120.0			
Totals:	8	0	0	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$0	\$784	\$36,412	140.0			

Year: 2011

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
A/C - Piezo	2	0	0	\$334	\$334	\$334	10.0	\$334	\$334	\$334	10.0	\$0	\$196	\$2,200	20.0			
WIM - Piezo	6	0	0	\$5,604	\$5,604	\$5,604	60.0	\$5,604	\$5,604	\$5,604	60.0	\$0	\$588	\$34,212	120.0			
Totals:	8	0	0	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$0	\$784	\$36,412	140.0			

Year: 2012

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials
A/C - Piezo	2	0	2	\$334	\$334	\$334	10.0	\$334	\$334	\$334	10.0	\$20,000	\$196	\$21,866	20.0			
WIM - Piezo	6	0	6	\$5,604	\$5,604	\$5,604	60.0	\$5,604	\$5,604	\$5,604	60.0	\$60,000	\$588	\$88,608	120.0			
Totals:	8	0	8	\$5,938	\$5,938	\$5,938	70.0	\$5,938	\$5,938	\$5,938	70.0	\$80,000	\$784	\$110,474	140.0			

Tucson FMS

Year: 1999

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
CCTV	14	14	0	\$9,114	\$5,866	\$9,058	112.0	\$2,282	\$1,470	\$0	28.0	\$0	\$322	\$28,112	140.0	
ILD Cabinet	58	58	0	\$20,938	\$15,544	\$2,958	261.0	\$1,682	\$3,074	\$0	58.0	\$0	\$2,204	\$46,400	319.0	
Ramp Meter/ILD	24	24	0	\$8,664	\$6,432	\$1,224	108.0	\$24,552	\$20,160	\$0	912.0	\$0	\$1,080	\$62,112	1020.0	
VMS	10	10	0	\$5,930	\$6,960	\$0	150.0	\$3,690	\$2,500	\$0	250.0	\$0	\$10,350	\$29,430	400.0	
Totals:	106	106	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$0	1248.0	\$0	\$13,956	\$166,054	1879.0	

Year: 2000

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
CCTV	14	0	0	\$9,114	\$5,866	\$9,058	112.0	\$2,282	\$1,470	\$0	28.0	\$0	\$322	\$30,380	140.0	
ILD Cabinet	58	0	0	\$20,938	\$15,544	\$2,958	261.0	\$1,682	\$3,074	\$812	58.0	\$0	\$2,204	\$47,212	319.0	
Ramp Meter/ILD	24	0	0	\$8,664	\$6,432	\$1,224	108.0	\$24,552	\$20,160	\$23,112	912.0	\$0	\$1,080	\$85,224	1020.0	
VMS	10	0	0	\$5,930	\$6,960	\$0	150.0	\$3,690	\$2,500	\$0	250.0	\$0	\$10,350	\$29,430	400.0	
Totals:	106	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$26,192	1248.0	\$0	\$13,956	\$192,246	1879.0	

Year: 2001

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
CCTV	14	0	0	\$9,114	\$5,866	\$9,058	112.0	\$2,282	\$1,470	\$2,268	28.0	\$0	\$322	\$30,380	140.0	
ILD Cabinet	58	0	0	\$20,938	\$15,544	\$2,958	261.0	\$1,682	\$3,074	\$812	58.0	\$0	\$2,204	\$47,212	319.0	
Ramp Meter/ILD	24	0	0	\$8,664	\$6,432	\$1,224	108.0	\$24,552	\$20,160	\$23,112	912.0	\$0	\$1,080	\$85,224	1020.0	
VMS	10	0	0	\$5,930	\$6,960	\$0	150.0	\$3,690	\$2,500	\$0	250.0	\$0	\$10,350	\$29,430	400.0	
Totals:	106	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$26,192	1248.0	\$0	\$13,956	\$192,246	1879.0	

Tucson FMS

Year: 2002		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type		
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours	
CCTV	14	0	0	\$9,114	\$5,866	\$9,058	112.0	\$2,282	\$1,470	\$2,268	28.0	\$0	\$322	\$30,380	140.0
ILD Cabinet	58	0	0	\$20,938	\$15,544	\$2,958	261.0	\$1,682	\$3,074	\$812	58.0	\$0	\$2,204	\$47,212	319.0
Ramp Meter/ILD	24	0	0	\$8,664	\$6,432	\$1,224	108.0	\$24,552	\$20,160	\$23,112	912.0	\$0	\$1,080	\$85,224	1020.0
VMS	10	0	0	\$5,930	\$6,960	\$0	150.0	\$3,690	\$2,500	\$0	250.0	\$0	\$10,350	\$29,430	400.0
Totals:	106	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$26,192	1248.0	\$0	\$13,956	\$192,246	1879.0

Year: 2003		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type		
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours	
CCTV	14	0	0	\$9,114	\$5,866	\$9,058	112.0	\$2,282	\$1,470	\$2,268	28.0	\$0	\$322	\$30,380	140.0
ILD Cabinet	58	0	0	\$20,938	\$15,544	\$2,958	261.0	\$1,682	\$3,074	\$812	58.0	\$0	\$2,204	\$47,212	319.0
Ramp Meter/ILD	24	0	0	\$8,664	\$6,432	\$1,224	108.0	\$24,552	\$20,160	\$23,112	912.0	\$0	\$1,080	\$85,224	1020.0
VMS	10	0	0	\$5,930	\$6,960	\$0	150.0	\$3,690	\$2,500	\$0	250.0	\$0	\$10,350	\$29,430	400.0
Totals:	106	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$26,192	1248.0	\$0	\$13,956	\$192,246	1879.0

Year: 2004		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type		
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours	
CCTV	14	0	0	\$9,114	\$5,866	\$9,058	112.0	\$2,282	\$1,470	\$2,268	28.0	\$0	\$322	\$30,380	140.0
ILD Cabinet	58	0	0	\$20,938	\$15,544	\$2,958	261.0	\$1,682	\$3,074	\$812	58.0	\$0	\$2,204	\$47,212	319.0
Ramp Meter/ILD	24	0	0	\$8,664	\$6,432	\$1,224	108.0	\$24,552	\$20,160	\$23,112	912.0	\$0	\$1,080	\$85,224	1020.0
VMS	10	0	0	\$5,930	\$6,960	\$0	150.0	\$3,690	\$2,500	\$0	250.0	\$0	\$10,350	\$29,430	400.0
Totals:	106	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$26,192	1248.0	\$0	\$13,956	\$192,246	1879.0

Tucson FMS

Year: 2005

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
CCTV	14	0	0	\$9,114	\$5,866	\$9,058	112.0	\$2,282	\$1,470	\$2,268	28.0	\$0	\$322	\$30,380	140.0	
ILD Cabinet	58	0	0	\$20,938	\$15,544	\$2,958	261.0	\$1,682	\$3,074	\$812	58.0	\$0	\$2,204	\$47,212	319.0	
Ramp Meter/ILD	24	0	0	\$8,664	\$6,432	\$1,224	108.0	\$24,552	\$20,160	\$23,112	912.0	\$0	\$1,080	\$85,224	1020.0	
VMS	10	0	0	\$5,930	\$6,960	\$0	150.0	\$3,690	\$2,500	\$0	250.0	\$0	\$10,350	\$29,430	400.0	
Totals:	106	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$26,192	1248.0	\$0	\$13,956	\$192,246	1879.0	

Year: 2006

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
CCTV	14	0	0	\$9,114	\$5,866	\$9,058	112.0	\$2,282	\$1,470	\$2,268	28.0	\$0	\$322	\$30,380	140.0	
ILD Cabinet	58	0	0	\$20,938	\$15,544	\$2,958	261.0	\$1,682	\$3,074	\$812	58.0	\$0	\$2,204	\$47,212	319.0	
Ramp Meter/ILD	24	0	0	\$8,664	\$6,432	\$1,224	108.0	\$24,552	\$20,160	\$23,112	912.0	\$0	\$1,080	\$85,224	1020.0	
VMS	10	0	0	\$5,930	\$6,960	\$0	150.0	\$3,690	\$2,500	\$0	250.0	\$0	\$10,350	\$29,430	400.0	
Totals:	106	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$26,192	1248.0	\$0	\$13,956	\$192,246	1879.0	

Year: 2007

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Totals By Equip. Type
CCTV	14	0	14	\$9,114	\$5,866	\$9,058	112.0	\$2,282	\$1,470	\$0	28.0	\$238,000	\$322	\$268,112	140.0	
ILD Cabinet	58	0	0	\$20,938	\$15,544	\$2,958	261.0	\$1,682	\$3,074	\$812	58.0	\$0	\$2,204	\$47,212	319.0	
Ramp Meter/ILD	24	0	0	\$8,664	\$6,432	\$1,224	108.0	\$24,552	\$20,160	\$23,112	912.0	\$0	\$1,080	\$85,224	1020.0	
VMS	10	0	0	\$5,930	\$6,960	\$0	150.0	\$3,690	\$2,500	\$0	250.0	\$0	\$10,350	\$29,430	400.0	
Totals:	106	0	14	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$23,924	1248.0	\$0	\$13,956	\$427,978	1879.0	

Tucson FMS

Year: 2008

Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Demand	Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand	Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Replace Costs	Operating Costs	Totals By Equip. Type
CCTV	14	0	0	\$9,114	\$5,866	\$9,058	112.0	\$2,282	\$1,470	\$2,268	28.0	\$0	\$322	\$30,380	140.0									
ILD Cabinet	58	0	0	\$20,938	\$15,544	\$2,958	261.0	\$1,682	\$3,074	\$812	58.0	\$0	\$2,204	\$47,212	319.0									
Ramp Meter/LD	24	0	24	\$8,664	\$6,432	\$1,224	108.0	\$24,552	\$20,160	\$0	912.0	\$360,000	\$1,080	\$422,112	1020.0									
VMS	10	0	0	\$5,930	\$6,960	\$0	150.0	\$3,690	\$2,500	\$0	250.0	\$0	\$10,350	\$29,430	400.0									
Totals:	106	0	24	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$3,080	1248.0	\$360,000	\$13,956	\$329,134	1879.0									

Year: 2009

Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Demand	Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand	Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Replace Costs	Operating Costs	Totals By Equip. Type
CCTV	14	0	0	\$9,114	\$5,866	\$9,058	112.0	\$2,282	\$1,470	\$2,268	28.0	\$0	\$322	\$30,380	140.0									
ILD Cabinet	58	0	0	\$20,938	\$15,544	\$2,958	261.0	\$1,682	\$3,074	\$812	58.0	\$0	\$2,204	\$47,212	319.0									
Ramp Meter/LD	24	0	0	\$8,664	\$6,432	\$1,224	108.0	\$24,552	\$20,160	\$23,112	912.0	\$0	\$1,080	\$85,224	1020.0									
VMS	10	0	0	\$5,930	\$6,960	\$0	150.0	\$3,690	\$2,500	\$5,700	250.0	\$0	\$10,350	\$35,130	400.0									
Totals:	106	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$3,080	1248.0	\$0	\$13,956	\$1879.0										

Year: 2010

Equipment Type	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Demand	Maintenance Costs	Labor	Equipment	Materials	ManHours	Demand	Maintenance Costs	Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Replace Costs	Operating Costs	Totals By Equip. Type
CCTV	14	0	0	\$9,114	\$5,866	\$9,058	112.0	\$2,282	\$1,470	\$2,268	28.0	\$0	\$322	\$30,380	140.0									
ILD Cabinet	58	0	58	\$20,938	\$15,544	\$2,958	261.0	\$1,682	\$3,074	\$0	58.0	\$522,000	\$2,204	\$568,400	319.0									
Ramp Meter/LD	24	0	0	\$8,664	\$6,432	\$1,224	108.0	\$24,552	\$20,160	\$23,112	912.0	\$0	\$1,080	\$85,224	1020.0									
VMS	10	0	0	\$5,930	\$6,960	\$0	150.0	\$3,690	\$2,500	\$5,700	250.0	\$0	\$10,350	\$35,130	400.0									
Totals:	106	0	58	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$3,080	1248.0	\$522,000	\$13,956	\$719,134	1879.0									

Tucson FMS

Year: 2011

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours	
CCTV	14	0	0	\$9,114	\$5,866	\$9,058	112.0	\$2,282	\$1,470	\$2,268	28.0	\$0	\$322	\$30,380	140.0			
ILD Cabinet	58	0	0	\$20,938	\$15,544	\$2,958	261.0	\$1,682	\$3,074	\$812	58.0	\$0	\$2,204	\$47,212	319.0			
Ramp Meter/ILD	24	0	0	\$8,664	\$6,432	\$1,224	108.0	\$24,552	\$20,160	\$23,112	912.0	\$0	\$1,080	\$85,224	1020.0			
VMS	10	0	0	\$5,930	\$6,960	\$0	150.0	\$3,690	\$2,500	\$5,700	250.0	\$0	\$10,350	\$35,130	400.0			
Totals:	106	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$31,892	1248.0	\$0	\$13,956	\$197,946	1879.0			

Year: 2012

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours	
CCTV	14	0	0	\$9,114	\$5,866	\$9,058	112.0	\$2,282	\$1,470	\$2,268	28.0	\$0	\$322	\$30,380	140.0			
ILD Cabinet	58	0	0	\$20,938	\$15,544	\$2,958	261.0	\$1,682	\$3,074	\$812	58.0	\$0	\$2,204	\$47,212	319.0			
Ramp Meter/ILD	24	0	0	\$8,664	\$6,432	\$1,224	108.0	\$24,552	\$20,160	\$23,112	912.0	\$0	\$1,080	\$85,224	1020.0			
VMS	10	0	0	\$5,930	\$6,960	\$0	150.0	\$3,690	\$2,500	\$5,700	250.0	\$0	\$10,350	\$35,130	400.0			
Totals:	106	0	0	\$44,646	\$34,802	\$13,240	631.0	\$32,206	\$27,204	\$31,892	1248.0	\$0	\$13,956	\$197,946	1879.0			

Tucson Rural ITS

Year: 2002										Demand Maintenance Costs						Totals By Equipment Type		
Equipment Type	Preventive Maintenance Costs			Replaced Equipment Costs			Labor Costs			Operating Equipment Costs			Replace Costs			Totals By Equipment Type		
	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	Man-Hours	
VMS	3	0	0	\$1,779	\$2,088	\$0	45.0	\$1,107	\$750	\$0	75.0	\$0	\$3,105	\$8,629	120.0			
Totals:	3	0	0	\$1,779	\$2,088	\$0	45.0	\$1,107	\$750	\$0	75.0	\$0	\$3,105	\$8,629	120.0			

Equipment Type	Year: 2003			Demand Maintenance Costs						Totals By Equipment Type		
				Preventive Maintenance Costs			Labor			Replace Costs		
	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Equipment	Materials	ManHours	Costs	Costs
VMS	9	6	0	\$5,337	\$6,264	\$0	135.0	\$3,321	\$2,250	\$0	225.0	\$0
Totals:	9	6	0	\$5,337	\$6,264	\$0	135.0	\$3,321	\$2,250	\$0	225.0	\$0

Equipment Type	Year: 2005			Preventive Maintenance Costs			Demand Maintenance Costs			Replace Equipment Costs			Operating Costs			Totals by Equipment Type	
	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor Costs	Equipment Costs	Materials Costs	ManHours Costs		
VMS	9	0	0	\$5,337	\$6,264	\$0	135.0	\$3,321	\$2,250	\$0	225.0	\$0	\$9,315	\$26,487	\$360.0		
Totals:	9	0	0	\$5,337	\$6,264	\$0	135.0	\$3,321	\$2,250	\$0	225.0	\$0	\$9,315	\$26,487	360.0		

Tucson Rural ITS

Year: 2006		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours							
VMS	9	0	0	\$5,337	\$6,264	\$0	135.0	\$3,321	\$2,250	\$0	225.0	\$0	\$9,315	\$26,487	\$26,487	360.0			
Totals:	9	0	0	\$5,337	\$6,264	\$0	135.0	\$3,321	\$2,250	\$0	225.0	\$0	\$9,315	\$26,487	\$26,487	360.0			

Year: 2007		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours							
RWIS-RPU	4	4	0	\$592	\$928	\$0	20.0	\$1,340	\$0	\$0	42.0	\$0	\$680	\$3,540	\$3,540	62.0			
VMS	9	0	0	\$5,337	\$6,264	\$0	135.0	\$3,321	\$2,250	\$0	225.0	\$0	\$9,315	\$26,487	\$26,487	360.0			
Totals:	13	4	0	\$5,929	\$7,192	\$0	155.0	\$4,661	\$2,250	\$0	267.0	\$0	\$9,995	\$30,027	\$30,027	422.0			

Year: 2008		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours							
RWIS-RPU	4	0	0	\$592	\$928	\$0	20.0	\$1,340	\$0	\$0	42.0	\$0	\$680	\$3,540	\$3,540	62.0			
VMS	9	0	0	\$5,337	\$6,264	\$0	135.0	\$3,321	\$2,250	\$0	225.0	\$0	\$9,315	\$26,487	\$26,487	360.0			
Totals:	13	0	0	\$5,929	\$7,192	\$0	155.0	\$4,661	\$2,250	\$0	267.0	\$0	\$9,995	\$30,027	\$30,027	422.0			

Year: 2009		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Operating Costs			Totals By Equip. Type		
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours							
RWIS-RPU	4	0	0	\$592	\$928	\$0	20.0	\$1,340	\$0	\$10,452	42.0	\$0	\$680	\$13,992	\$13,992	62.0			
VMS	9	0	0	\$5,337	\$6,264	\$0	135.0	\$3,321	\$2,250	\$0	225.0	\$0	\$9,315	\$26,487	\$26,487	360.0			
Totals:	13	0	0	\$5,929	\$7,192	\$0	155.0	\$4,661	\$2,250	\$10,452	267.0	\$0	\$9,995	\$40,479	\$40,479	422.0			

Tucson Rural ITS

Year: 2010				Preventive Maintenance Costs				Demand Maintenance Costs				Replace Costs				Operating Costs				Totals By Equip. Type			
Equipment Type		Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours	
RWIS-RPU	4	0	0	\$592	\$928	\$0	20.0	\$1,340	\$0	\$10,452	42.0	\$0	\$680	\$13,952	62.0								
VMS	9	0	0	\$5,337	\$6,264	\$0	135.0	\$3,321	\$2,250	\$0	225.0	\$0	\$9,315	\$26,487	360.0								
Totals:	13	0	0	\$5,929	\$7,192	\$0	155.0	\$4,661	\$2,250	\$10,452	267.0	\$0	\$9,955	\$40,478	422.0								

Year: 2011				Preventive Maintenance Costs				Demand Maintenance Costs				Replace Costs				Operating Costs				Totals By Equip. Type			
Equipment Type		Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours	
RWIS-RPU	9	5	0	\$1,332	\$2,088	\$0	45.0	\$3,015	\$0	\$10,452	94.5	\$0	\$1,530	\$18,417	139.5								
VMS	11	2	0	\$6,523	\$7,656	\$0	165.0	\$4,059	\$2,750	\$1,710	275.0	\$0	\$11,385	\$34,083	440.0								
Totals:	20	7	0	\$7,855	\$9,744	\$0	210.0	\$7,074	\$2,750	\$12,162	369.5	\$0	\$12,915	\$52,500	579.5								

Year: 2012				Preventive Maintenance Costs				Demand Maintenance Costs				Replace Costs				Operating Costs				Totals By Equip. Type			
Equipment Type		Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours	
RWIS-RPU	9	0	0	\$1,332	\$2,088	\$0	45.0	\$3,015	\$0	\$10,452	94.5	\$0	\$1,530	\$18,417	139.5								
VMS	11	0	0	\$6,523	\$7,656	\$0	165.0	\$4,059	\$2,750	\$1,710	275.0	\$0	\$11,385	\$34,083	440.0								
Totals:	20	0	0	\$7,855	\$9,744	\$0	210.0	\$7,074	\$2,750	\$12,162	369.5	\$0	\$12,915	\$52,500	579.5								

Yuma Rural ITS

Year:	2004						Demand Maintenance Costs						Totals By Equipment Type		
	Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Labor	Equipment	Materials	ManHours	Replace Costs	Operating Costs	Costs	ManHours
					Labor	Equipment	Materials								
VMS	2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$5,886	80.0
Totals:	2	0	0	\$1,186	\$1,392	\$0	30.0	\$738	\$500	\$0	50.0	\$0	\$2,070	\$5,886	80.0

Year:	2005										2006									
	Preventive Maintenance Costs					Demand Maintenance Costs					Preventive Maintenance Costs					Demand Maintenance Costs				
	Equipment Type		Total Units	New Units	Replaced Units	Labor	Equipment	Materials	Man-Hours	Labor	Equipment	Materials	Man-Hours	Labor	Equipment	Materials	Man-Hours	Labor	Equipment	Materials
VMS	6	4	0	\$3,558	\$4,176	\$0	90.0	\$2,214	\$1,500	\$0	150.0	\$0	\$6,210	\$17,658	\$240.0	\$0	\$6,210	\$17,658	\$240.0	
Totals:	6	4	0	\$3,558	\$4,176	\$0	90.0	\$2,214	\$1,500	\$0	150.0	\$0	\$6,210	\$17,658	\$240.0	\$0	\$6,210	\$17,658	\$240.0	

Year:	2006						2007					
	Equipment Type			Preventive Maintenance Costs			Demand Maintenance Costs			Totals By Equipment Type		
	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs
VMS	6	0	0	\$3,553	\$4,176	\$0	90.0	\$2,214	\$1,500	\$0	150.0	\$0
Totals:	6	0	0	\$3,553	\$4,176	\$0	90.0	\$2,214	\$1,500	\$0	150.0	\$0

Equipment Type	Year: 2007			Demand Maintenance Costs						Replace Equipment Costs			Operating Costs			Totals By Equipment Type		
				Preventive Maintenance Costs			Labor			Equipment Materials			ManHours					
	Total Units	New Units	Replaced Units	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	Costs	Costs
VMS	6	0	0	\$3,558	\$4,176	\$0	90.0	\$2,214	\$1,500	\$0	150.0	\$0	\$6,210	\$17,658	240.0			
Totals:	6	0	0	\$3,558	\$4,176	\$0	90.0	\$2,214	\$1,500	\$0	150.0	\$0	\$6,210	\$17,658	240.0			

Yuma Rural ITS

Year: 2008

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
CCTV	1	1	0	\$651	\$419	\$647	8.0	\$163	\$105	\$0	2.0	\$0	\$23	\$2,008	10.0
RWIS-RPU	1	1	0	\$148	\$232	\$0	5.0	\$335	\$0	\$0	10.5	\$0	\$170	\$885	15.5
VDS	1	1	0	\$138	\$128	\$77	9.0	\$29	\$53	\$0	1.0	\$0	\$45	\$470	10.0
VMS	12	6	0	\$7,116	\$8,352	\$0	180.0	\$4,428	\$3,000	\$0	300.0	\$0	\$12,420	\$35,316	480.0
Totals:	15	9	0	\$8,053	\$9,131	\$724	202.0	\$4,955	\$3,158	\$0	313.5	\$0	\$12,658	\$38,679	515.5

Year: 2009

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
CCTV	1	0	0	\$651	\$419	\$647	8.0	\$163	\$105	\$0	2.0	\$0	\$23	\$2,170	10.0
RWIS-RPU	1	0	0	\$148	\$232	\$0	5.0	\$335	\$0	\$0	10.5	\$0	\$170	\$885	15.5
VDS	1	0	0	\$138	\$128	\$77	9.0	\$29	\$53	\$0	1.0	\$0	\$45	\$470	10.0
VMS	12	0	0	\$7,116	\$8,352	\$0	180.0	\$4,428	\$3,000	\$0	300.0	\$0	\$12,420	\$35,316	480.0
Totals:	15	0	0	\$8,053	\$9,131	\$724	202.0	\$4,955	\$3,158	\$0	313.5	\$0	\$12,658	\$38,841	515.5

Year: 2010

Equipment Type	Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs			Totals By Equip. Type		
				Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours
CCTV	1	0	0	\$851	\$419	\$647	8.0	\$163	\$105	\$0	2.0	\$0	\$23	\$2,170	10.0
RWIS-RPU	1	0	0	\$148	\$232	\$0	5.0	\$335	\$0	\$2,613	1.0.5	\$0	\$170	\$3,498	15.5
VDS	1	0	0	\$138	\$128	\$77	9.0	\$29	\$53	\$14	1.0	\$0	\$45	\$484	10.0
VMS	12	0	0	\$7,116	\$8,352	\$0	180.0	\$4,428	\$3,000	\$0	300.0	\$0	\$12,420	\$35,316	480.0
Totals:	15	0	0	\$8,053	\$9,131	\$724	202.0	\$4,955	\$3,158	\$2,789	313.5	\$0	\$12,658	\$41,468	515.5

Yuma Rural ITS

Year: 2011		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type	
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
CCTV	1	0	0	\$651	\$419	\$647	8.0	\$163	\$105	\$162	2.0	\$0	\$23	\$2,170
RWIS-RPU	1	0	0	\$148	\$232	\$0	5.0	\$335	\$0	\$2,613	10.5	\$0	\$170	\$3,498
VDS	1	0	0	\$138	\$128	\$77	9.0	\$29	\$53	\$14	1.0	\$0	\$45	\$484
VMS	12	0	0	\$7,116	\$8,352	\$0	180.0	\$4,428	\$3,000	\$0	300.0	\$0	\$12,420	\$35,316
Totals:	15	0	0	\$8,053	\$9,131	\$724	202.0	\$4,955	\$3,158	\$2,789	313.5	\$0	\$12,658	\$41,468
														\$15.5

Year: 2012		Total Units	New Units	Replaced Units	Preventive Maintenance Costs			Demand Maintenance Costs			Replace Costs	Operating Costs	Totals By Equip. Type	
Equipment Type					Labor	Equipment	Materials	ManHours	Labor	Equipment	Materials	ManHours	Costs	ManHours
CCTV	1	0	0	\$651	\$419	\$647	8.0	\$163	\$105	\$162	2.0	\$0	\$23	\$2,170
RWIS-RPU	1	0	0	\$148	\$232	\$0	5.0	\$335	\$0	\$2,613	10.5	\$0	\$170	\$3,498
VDS	1	0	0	\$138	\$128	\$77	9.0	\$29	\$53	\$14	1.0	\$0	\$45	\$484
VMS	12	0	0	\$7,116	\$8,352	\$0	180.0	\$4,428	\$3,000	\$0	300.0	\$0	\$12,420	\$35,316
Totals:	15	0	0	\$8,053	\$9,131	\$724	202.0	\$4,955	\$3,158	\$2,789	313.5	\$0	\$12,658	\$41,468
														\$15.5

APPENDIX E

Statewide ITI Inventory Forecast (excluding Phoenix TOC and Flagstaff TOC)

ATRC

ITS Phase	Year Deployed	Equipment	Route/Location	Units Deployed
0	1996	AVC - Piezo	I 008	1
0	1996	AVC - Piezo	I 010	2
0	1996	AVC - Piezo	I 019	2
0	1996	AVC - Piezo	I 040	2
0	1996	AVC - Piezo	S 068	1
0	1996	AVC - Piezo	S 095	1
0	1996	WIM - Bending Plate	I 010	1
0	1996	WIM - Bending Plate	I 040	2
0	1996	WIM - Bending Plate	U 093	1
0	1996	WIM - Piezo	I 008	1
0	1996	WIM - Piezo	I 010	2
0	1996	WIM - Piezo	I 019	2
0	1996	WIM - Piezo	I 040	2
0	1996	WIM - Piezo	S 085	1
0	1996	WIM - Piezo	S 417	1
0	1996	WIM - Piezo	U 060	1

Flagstaff Rural ITS

ITS Phase	Year Deployed	Equipment	Route/Location	Units Deployed
0	1992	RWIS-CPU	District Office	1
0	1992	RWIS-RPU	I 040	7
1	1998	RWIS-RPU	I 017	2
1	1998	RWIS-RPU	I 040	1
1	1998	VMS	I 017	1
1	1998	VMS	I 040	2
2	1999	RWIS-RPU	I 040	1
2	1999	VMS	I 017	1
2	1999	VMS	I 040	3
5	2002	RWIS-RPU	I 017	2
5	2002	RWIS-RPU	S 064	1
5	2002	RWIS-RPU	S 089	1
5	2002	VMS	U 089	1
11	2004	VMS	I 017	2
11	2004	VMS	I 040	4
20	2008	CCTV	Other	1
20	2008	VMS	S 064	1
20	2008	VMS	U 160	1
20	2008	VMS	U 180	1
22	2009	VDS	Other	1
22	2009	VMS	I 015	2
22	2009	VMS	I 040	1
22	2009	VMS	S 064	1
22	2009	VMS	S 089	2

Globe Rural ITS

ITS Phase	Year Deployed	Equipment	Route/Location	Units Deployed
6	2002	RWIS-RPU	S 077	2
6	2002	RWIS-RPU	S 260	2
6	2002	RWIS-RPU	U 060	1
6	2002	RWIS-RPU	U 180	1
16	2006	VMS	U 060	3
16	2006	VMS	U 070	1
19	2007	CCTV	Other	2
19	2007	VMS	S 077	1
19	2007	VMS	U 060	1
20	2008	VMS	S 077	1
20	2008	VMS	U 060	1
24	2010	VDS	Other	2

Holbrook Rural ITS

ITS Phase	Year Deployed	Equipment	Route/Location	Units Deployed
1	1998	RWIS-RPU	I 040	1
1	1998	RWIS-RPU	S 087	1
1	1998	RWIS-RPU	S 377	1
2	1999	RWIS-RPU	I 040	1
2	1999	VMS	I 040	2
4	2001	RWIS-RPU	S 077	1
4	2001	RWIS-RPU	S 264	2
4	2001	RWIS-RPU	U 064	1
4	2001	RWIS-RPU	U 160	1
4	2001	VMS	I 040	3
5	2002	VMS	I 040	2
8	2003	VMS	U 160	2
11	2004	RWIS-RPU	I 040	6
11	2004	RWIS-RPU	S 087	1
11	2004	VMS	I 040	1
11	2004	VMS	U 160	1
17	2007	CCTV	Other	3
17	2007	VMS	S 264	1
17	2007	VMS	U 191	2
22	2009	VMS	I 040	1
22	2009	VMS	S 564	1
22	2009	VMS	U 089	1
22	2009	VMS	U 163	2
22	2009	VMS	U 191	1
23	2010	CCTV	Other	2
23	2010	CCTV	U 160	1
23	2010	RWIS-RPU	S 077	1
23	2010	RWIS-RPU	S 264	3
23	2010	RWIS-RPU	U 160	2
23	2010	VDS	Other	5
23	2010	VDS	U 160	1
23	2010	VMS	S 077	1

Kingman Rural ITS

ITS Phase	Year Deployed	Equipment	Route/Location	Units Deployed
2	2000	VMS	I 040	1
2	2000	VMS	S 068	1
2	2000	VMS	U 093	1
4	2001	VMS	I 040	3
5	2002	RWIS-RPU	S 066	1
8	2003	VMS	I 040	1
12	2005	RWIS-RPU	I 040	1
12	2005	RWIS-RPU	S 089	1
12	2005	RWIS-RPU	U 093	1
12	2005	VMS	I 040	1
12	2005	VMS	U 093	1
19	2007	VMS	I 040	1
19	2007	VMS	S 095	1
19	2007	VMS	U 093	1
23	2010	CCTV	Other	1
23	2010	VDS	Other	1
23	2010	VMS	I 040	2
24	2010	RWIS-RPU	I 040	2
24	2010	RWIS-RPU	S 066	1
24	2010	RWIS-RPU	S 068	1
24	2010	VMS	S 095	1

Phoenix FMS

ITS Phase	Year Deployed	Equipment	Route/Location	Units Deployed
1	1990	CCTV	I 010	20
1	1992	Ramp Meter/ILD	U 060	12
1	1994	CCTV	I 010	20
1	1994	CCTV	I 017	8
1	1994	ILD Cabinet	I 010	87
1	1994	ILD Cabinet	I 017	34
1	1994	Node Room	I 010	10
1	1994	Power Cabinet	I 010	37
1	1994	Power Cabinet	I 017	13
1	1994	Ramp Meter/ILD	I 010	29
1	1994	Ramp Meter/ILD	I 017	11
1	1994	Ramp Meter/ILD	S 051	1
1	1994	VMS	I 010	18
1	1994	VMS	I 017	6
2	1997	CCTV	S 051	7
2	1997	CCTV	S 143	4
2	1997	CCTV	S 202	3
2	1997	ILD Cabinet	S 143	22
2	1997	ILD Cabinet	S 202	15
2	1997	Node Room	S 051	2
2	1997	PAD Cabinet	S 051	19
2	1997	Power Cabinet	S 051	14
2	1997	Power Cabinet	S 143	4
2	1997	Power Cabinet	S 202	6
2	1997	Ramp Meter/ILD	I 010	1
2	1997	Ramp Meter/ILD	I 017	19
2	1997	Ramp Meter/ILD	S 202	6
2	1997	Ramp Meter/PAD	S 051	11
2	1997	VMS	S 051	3
2	1997	VMS	S 143	2
2	1997	VMS	S 202	2
3	2001	CCTV	I 017	11
3	2001	Ramp Meter/ILD	I 017	16
3	2001	TMS	I 017	42
3	2001	VMS	I 017	9
4	1999	CCTV	S 101	3
4	1999	CCTV	S 202	6
4	1999	Power Cabinet	S 101	6
4	1999	Power Cabinet	S 202	12
4	1999	Ramp Meter/ILD	S 101	5
4	1999	Ramp Meter/ILD	S 202	5
4	1999	TMS	S 101	30
4	1999	TMS	S 202	24
4	1999	VMS	S 101	2
4	1999	VMS	S 202	4
5	2000	CCTV	S 051	7
5	2000	Power Cabinet	S 051	16
5	2000	Ramp Meter/ILD	S 051	12
5	2000	TMS	S 051	42
5	2000	VMS	S 051	4

Phoenix FMS

ITS Phase	Year Deployed	Equipment	Route/Location	Units Deployed
6	2002	CCTV	S 101	4
6	2002	Power Cabinet	S 101	24
6	2002	Power Cabinet	S 202	8
6	2002	Ramp Meter/ILD	S 101	6
6	2002	TMS	S 101	72
6	2002	TMS	S 202	24
6	2002	VMS	S 101	2
7	2001	CCTV	I 010	4
7	2001	CCTV	U 060	6
7	2001	Power Cabinet	I 010	14
7	2001	Power Cabinet	U 060	21
7	2001	Ramp Meter/ILD	I 010	1
7	2001	TMS	I 010	42
7	2001	TMS	U 060	66
7	2001	VMS	I 010	3
7	2001	VMS	U 060	3
8	2002	CCTV	U 060	6
8	2002	Power Cabinet	U 060	12
8	2002	Ramp Meter/ILD	U 060	12
8	2002	TMS	U 060	36
8	2002	VMS	U 060	4
9	2003	CCTV	S 101	6
9	2003	Power Cabinet	S 101	14
9	2003	Ramp Meter/ILD	S 101	6
9	2003	TMS	S 101	42
9	2003	VMS	S 101	4
10	2004	CCTV	S 101	13
10	2004	Power Cabinet	S 101	26
10	2004	Ramp Meter/ILD	S 101	20
10	2004	TMS	S 101	78
10	2004	VMS	S 101	8
11	2005	CCTV	I 010	1
11	2005	CCTV	S 101	10
11	2005	Power Cabinet	I 010	4
11	2005	Power Cabinet	S 101	18
11	2005	Ramp Meter/ILD	I 010	2
11	2005	Ramp Meter/ILD	S 101	17
11	2005	TMS	I 010	12
11	2005	TMS	S 101	60
11	2005	VMS	I 010	3
11	2005	VMS	S 101	3
12	2006	CCTV	S 051	1
12	2006	CCTV	S 101	18
12	2006	Power Cabinet	S 051	6
12	2006	Power Cabinet	S 101	36
12	2006	Ramp Meter/ILD	S 051	4
12	2006	Ramp Meter/ILD	S 101	26
12	2006	TMS	S 051	18
12	2006	TMS	S 101	108
12	2006	VMS	S 051	1

Phoenix FMS

ITS Phase	Year Deployed	Equipment	Route/Location	Units Deployed
12	2006	VMS	S 101	14
13	2007	CCTV	U 060	7
13	2007	Power Cabinet	U 060	14
13	2007	Ramp Meter/ILD	U 060	12
13	2007	TMS	U 060	42
13	2007	VMS	U 060	5
14	2008	CCTV	S 202	7
14	2008	Power Cabinet	S 202	16
14	2008	Ramp Meter/ILD	S 202	14
14	2008	TMS	S 202	48
14	2008	VMS	S 202	6
15	2009	CCTV	S 202	9
15	2009	Power Cabinet	S 202	20
15	2009	Ramp Meter/ILD	S 202	12
15	2009	TMS	S 202	60
15	2009	VMS	S 202	7
16	2010	CCTV	S 202	25
16	2010	Power Cabinet	S 202	50
16	2010	Ramp Meter/ILD	S 202	32
16	2010	TMS	S 202	150
16	2010	VMS	S 202	15
17	2011	CCTV	S 202	25
17	2011	Power Cabinet	S 202	50
17	2011	Ramp Meter/ILD	S 202	22
17	2011	TMS	S 202	150
17	2011	VMS	S 202	15

Prescott Rural ITS

ITS Phase	Year Deployed	Equipment	Route/Location	Units Deployed
0	1995	VMS	S 260	2
9	2003	RWIS-RPU	S 089	2
9	2003	VMS	I 017	1
15	2006	CCTV	Other	1
15	2006	VDS	Other	1
15	2006	VMS	I 017	1
20	2008	VMS	S 069	1

Safford Rural ITS

ITS Phase	Year Deployed	Equipment	Route/Location	Units Deployed
1	1998	RWIS-RPU	I 010	2
1	1998	VMS	I 010	2
6	2002	VMS	I 010	2
8	2003	VMS	S 080	1
12	2005	VMS	I 010	2
12	2005	VMS	S 090	1
16	2006	RWIS-RPU	I 010	2
16	2006	VMS	I 010	4
16	2006	VMS	U 098	1
16	2006	VMS	U 191	1
24	2010	RWIS-RPU	I 010	1
24	2010	RWIS-RPU	Other	1
24	2010	RWIS-RPU	S 078	1
24	2010	RWIS-RPU	S 080	3
24	2010	RWIS-RPU	S 181	1
24	2010	RWIS-RPU	S 266	1
24	2010	RWIS-RPU	U 070	1
24	2010	RWIS-RPU	U 191	1

TPG

ITS Phase	Year Deployed	Equipment	Route/Location	Units Deployed
0	1996	AVC - Piezo	I 008	1
0	1996	AVC - Piezo	I 040	1
0	1996	WIM - Piezo	I 010	1
0	1996	WIM - Piezo	I 017	1
0	1996	WIM - Piezo	S 090	1
0	1996	WIM - Piezo	S 095	2
0	1996	WIM - Piezo	U 070	1

Tucson FMS

ITS Phase	Year Deployed	Equipment	Route/Location	Units Deployed
1	1999	CCTV	I 010	12
1	1999	CCTV	I 019	2
1	1999	ILD Cabinet	I 010	52
1	1999	ILD Cabinet	I 019	6
1	1999	Ramp Meter/ILD	I 010	24
1	1999	VMS	I 010	10

Tucson Rural ITS

ITS Phase	Year Deployed	Equipment	Route/Location	Units Deployed
3	2001	VMS	I 010	3
8	2003	VMS	I 008	1
8	2003	VMS	I 010	2
8	2003	VMS	I 019	1
8	2003	VMS	S 077	2
18	2007	RWIS-RPU	I 010	3
18	2007	RWIS-RPU	I 019	1
25	2011	RWIS-RPU	I 008	2
25	2011	RWIS-RPU	S 077	1
25	2011	RWIS-RPU	S 386	2
25	2011	VMS	I 019	2

Yuma Rural ITS

ITS Phase	Year Deployed	Equipment	Route/Location	Units Deployed
10	2003	VMS	I 008	1
10	2003	VMS	S 095	1
13	2005	VMS	I 010	2
13	2005	VMS	S 095	2
21	2008	CCTV	Other	1
21	2008	RWIS-RPU	S 095	1
21	2008	VDS	Other	1
21	2008	VMS	I 008	3
21	2008	VMS	S 085	2
21	2008	VMS	S 095	1

REFERENCES

1. PECOS Performance Guidelines and Activity Plans, FY 96/97, ORG 7893
2. ITS Project Life Cycle Plan, ADOT Transportation Technology Group, July 1997
3. Transportation System Management Center (TSMC) Operations and Implementation Plan, Washington State DOT, 1997
4. Telephone conversation with Mr. Gene Ofstead of Minnesota DOT
5. Communication from Mr. Robb Alexander of Virginia DOT
6. PECOS Demand Maintenance Cost Data for CCTV Cameras, Mr. Chuck McClatchey, ADOT
7. PECOS – ITI Data
8. Rural Intelligent Transportation Infrastructure Plan, ADOT Transportation Technology Group, June 1997
9. List of WIM/AVC Sites, provided by Dr. Estomih Kombe, ADOT/ATRC
10. I-40 ITS Strategic Plan
11. Phone Conversation with Mr. Manny Agah, FMS Project Manager, 2/10/98
12. Email correspondence from Mr. Don Dorman, ADOT Flagstaff
13. Phone conversation with Mr. Glenn Jonas, Phoenix FMS TOC
14. Communication from Mr. Jim Decker, AZTech Project, 5/11/1998
15. Phone conversations with Mr. Steve Owen & Ms. Dottie Shoup, ADOT, 5/12/1998
16. Information provided by Mr. Jon Nelson, Vision Field Office, ADOT

BIBLIOGRAPHY

1. Operating and Maintaining ITS Field Devices, National Conference White Papers, Institute of Transportation Engineers, March 1997
2. Operation and Maintenance of Electronic Traffic Control Systems, Final Report, Institute of Transportation Engineers, June 1995